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CHAPMAN

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Diseases in Haiti

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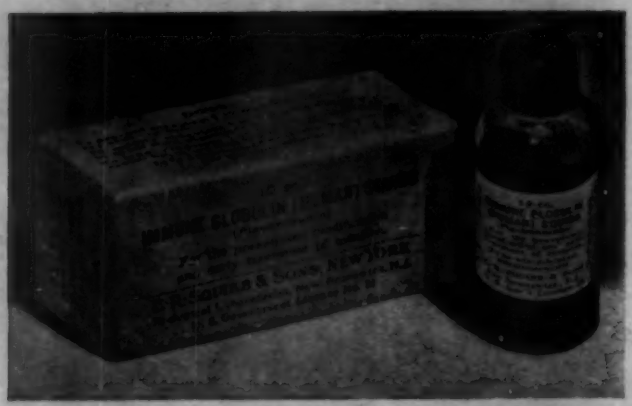

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American Journal of Public Health
and THE NATION'S HEALTH

Volume 25 August, 1935 Number 8

A Permanent Type of Ditch Construction

ALFRED H. FLETCHER, F.A.P.H.A.
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MEMPHIS has carried on an intensive malaria mosquito control program for 15 years and all money budgeted for this work has been spent on the control of the Anopheles breeding in the ditches and bayous. A total of approximately $140,000, excluding administrative and premise inspection costs, has been expended by the city during the years 1920 to 1934 inclusive, starting with an allotment of about $4,000 a year for a city of 24.3 square miles and a population of 162,351; and increasing to an allotment of about $13,000 a year for a city of 48.2 square miles and a population of 268,358. Until 1930, this money was expended solely for oiling all ditches once every 10 days, or as nearly every 10 days as is possible, with a small amount of ditching and cleaning of water courses during off seasons. In 1930 a small coöperative experimental project of lining about 1,000 feet of ditch with concrete was carried out at the suggestion of J. A. LePrince, with the U. S. Public Health Service furnishing the material and the city furnishing the supervision and labor. All of this ditch is still intact and is satisfactory as a concrete lining. This experimental project was installed in sections using different mixes and thicknesses to determine the most economical for general use in Memphis.

In ditching for malaria mosquito control, the ideal section of ditch is V shape with a narrow U shape center ditch within the larger main ditch. Flat bottoms, especially of dirt or in concrete culverts encourages meandering flow with frequent dams and pools. Permanently lined ditches with sodded banks prevents the ditch from scouring deeper, wider, and irregularly, eliminating the every 10 day routine oiling work. Repeated regrading, cleaning, and oiling of unlined earth ditches has proved a constant and endless task. Properly lined and stabilized ditches show a greater first cost, but are ultimately less costly and far more effective as a control measure. The maintenance cost of the ditch is practically eliminated, which in this day of intensive public building, is a very important point to a city. The problem of flood control and elimination of erosion and loss of public and private property, are other important benefits realized. With this in mind, in the C.W.A. ditching work in Memphis and later in the E.R.A. work, the concrete lining of ditches was stressed.

FIGURE I—Royster Bayou through a residential section at Galloway Avenue and Avalon Street, before work was done

J. A. LePrince, known to all yellow fever and malaria control workers for his outstanding leadership in this field from the first campaigns in Havana, Cuba, and the Panama Canal, to the present time, has been urging and assisting the Memphis Health Department in this work which promises to broaden and make far more effective our malaria mosquito control program.

Out of the rush and tension of our C.W.A. struggle to accomplish as much as possible with a large force of men with hastily selected and untried or un-

FIGURE II—Same as I after lined with broken concrete pieces for walls and bottom with cement grouting and sodded banks

tested relief supervision, with adverse weather conditions and with the problems of getting labor and materials, transportation and equipment to mesh in together, approximately 6 miles of 18" concrete lining was placed in the bottom of straightened ditches. An effort was made to sod and stabilize these concrete lined ditches as the work proceeded, but only approximately 2 miles of the 6 was sodded.

In all cases, without exception, where the concrete lining was installed and the banks were sodded, there were no failures and no follow-up repair work was necessary. Sodding should in all cases immediately follow the completion of the concrete lining. In other words, with a concrete lining by itself without protection such as is afforded by sod at the edge of the concrete lining, the swift flowing water in the narrow bottom of the ditch will erode the banks and undermine the concrete lining. Erosion may also be caused by water running down the bank from the top and forming little channels which will eventually cause erosion, especially at the edge of the concrete lining. Except in special cases, this erosion can be prevented by the use of Bermuda sod. In addition, sharp bends, tree roots and other obstructions cause eddies and churning and hence are important points to protect by removing or by special treatment to prevent erosion. A comparison of unit cost of concrete or rip-rap or sod when used to stabilize the banks of the ditch above the central concrete lining, indicates that with the use of sod, there is no material cost, while with the use of rip-rap and cement grouting, the material cost is 1 cent per sq. ft. and for concrete the cost is about 10 cents per sq. ft. In addition to protecting the sides and the bottom of the ditches to prevent erosion, it is advisable to incur additional expense in many cases to straighten the ditches, as this provides for quick run-off which is beneficial from a flood control standpoint and at the same time minimizes the erosive action of the water as it goes around the sharp bends.

LOCATION AND DESIGN

A preliminary survey by walking over the existing ditch will determine whether any changes should be made in the course or line of the ditch. If any changes are considered advisable or necessary, a more detailed survey of the ditch and territory adjacent to the existing and the proposed new location should be made to determine the location of the ditch, property lines, houses, culverts, sewers, water pipes, etc. A map and profile should be drawn showing the actual location and elevations as well as a map and profile of the proposed ditch together with the elevations of all underground piping. In some cases the property lines will govern largely the course of the ditch, and in all cases easements should be secured from the owners of property affected by the changes.

The grades, dimensions of section, the location and the course or line of each ditch depend on the drainage area or watershed it serves. This area has already determined or influenced the size, grade or elevation and location of bridges and culverts through actual field data and calculations, or through estimates based on experience when this data is not available. Subdivision developers have changed the course of drainage ofttimes in order to lay off as many lots as possible. After selling these lots to many individuals, some of whom build soon after their purchase, it soon becomes impossible to straighten or change ditch locations even though they may follow a crooked course around lot corners and buildings. It is important, however, to study the possibility of changing the existing zigzag course of many ditches to a shorter,

TABLE I

GUIDE FOR DESIGN OF LINED DITCHES

CITY OF MEMPHIS DEPARTMENT OF HEALTH

Culvert Dimensions		*Ditch Dimensions*					*Culvert Dimensions*		*Ditch Dimensions*				
Depth	*Width*	*Bottom*	*Top*	*Slope*	*A.d.*	*A.c.*	*Depth*	*Width*	*Bottom*	*Top*	*Slope*	*A.d.*	*A.c.*
2	2	1.5	3.5	½–1	5	4	5	4	1.5	6.5	½–1	20	20
2	3	1.5	4.5	¾–1	6	6	5	5	1.5	8.5	¾–1	25	25
2	4	2.0	6.0	1–1	8	8	5	6	1.5	10.5	1–1	30	30
2	5	3.0	7.0	1–1	10	10	5	7	2.0	12.0	1–1	35	35
2	6	4.0	8.0	1–1	12	12	5	8	3.0	13.0	1–1	40	40
2	7	5.0	9.0	1–1	14	14	5	9	4.0	14.0	1–1	45	45
2	8	6.0	10.0	1–1	16	16	5	10	5.0	15.0	1–1	50	50
3	3	1.5	4.5	½–1	9	9	6	5	1.5	8.5	¾–1	30	30
3	4	1.5	6.5	1–1	12	12	6	6	1.5	10.5	¾–1	36	36
3	5	2.0	8.0	1–1	15	15	6	7	1.5	12.5	1–1	42	42
3	6	3.0	9.0	1–1	18	18	6	8	2.0	14.0	1–1	48	48
3	7	4.0	10.0	1–1	21	21	6	9	3.0	15.0	1–1	54	54
3	8	5.0	11.0	1–1	24	24	6	10	4.0	16.0	1–1	60	60
4	4	1.5	6.5	¾–1	16	16	6	11	5.0	17.0	1–1	66	66
4	5	1.5	8.5	1–1	20	20	6	12	6.0	18.0	1–1	72	72
4	6	2.0	10.0	1–1	24	24	8	8	1.5	14.5	½–1	64	64
4	8	4.0	12.0	1–1	32	32	8	10	2.0	18.0	1–1	80	80

1. Minimum of 18″ bottom. 2. Limits of slopes: Minimum ½ to 1. Average 1 to 1. Maximum 1½ to 1. 3. Three or 4 culverts or bridges should be used in establishing necessary area of ditch. In going down stream area should never decrease but increase according to increased run-off.

straighter ditch and also wherever possible to eliminate the sharp bends which interfere with the flow of water in the ditch and create eddies and scouring.

In designing the proper section of ditch for the concrete lining with sodded banks, certain limiting values are used. The most satisfactory slope used in Memphis is a 1½ horizontal to 1 vertical. The minimum width lining is 18″. The area of the lined ditch should be greater than, or equal to the area of the culvert it receives its water from, if this culvert or bridge is built to carry a definite run-off already figured for the ditch. In other cases a number of culverts and bridges should be measured and the size of ditch figured to carry at least the volume of water now carried by the existing structures. In all cases, if possible, a uniform section should be kept throughout the length of each ditch. In general, linings should be U shape to carry the dry weather flow. In wide ditches a narrow U shape section can be installed in the center with sloping rip-rap sides for the rest of the width of the ditch. The maintaining of a uniform grade and section will minimize changes in velocity and the resultant dropping of sediment and thus prevent the forming of dams and leaving pools of water.

Table I has been computed as a guide in deciding on the proper width and slope of concrete lined ditches. In many cases, however, the actual width of a ditch may necessitate a wider bottom than shown in the table. The table is used only as a guide and to insure that all V shaped lined ditches are large enough to carry the run-off.

EXCAVATIONS

Grade and slope stakes should be set for the rough or preliminary excavation. On straight ditches the stakes should be set 50′ apart, on curves about every 25′ or less, and on sharp curves about 10′ apart. Cutting to these stakes will bring the ditch to within a few inches of the finished ditch. Better alignment and a more satisfactory completed ditch from all standpoints can be obtained if a trench the width

FIGURE III—Section of Madison Heights Bayou looking north toward Jefferson Avenue. Note: Caving frame supports an old shed before much work done.

of the bottom of the ditch is dug to line and grade and then the sides sloped rather than try to do sloping along with the other excavation. This does not apply to large ditches where "step excavation" is the best pro-

FIGURE IV—Same as III after lined with rip-rap and banks sodded

cedure. At this point the final grade stakes should be reset to finish the excavation. The top of the center line grade stake should be driven to the concrete finish grade, and the side and slope stakes should also be set to the concrete finish grade. The side stakes, that is, the ones at the outer edge of the concrete lining should be set about 6″ above the center line stakes on the 18″ and 24″ lining. The ditch bottom is cut to 2″ or 3″ (the thickness of the concrete lining) below the top of the stakes. This final excavation should be done by experienced ditchers to insure a uniform bottom to grade so as to have uniform thickness of concrete. If the lining is too thin it is weak: if it is too thick it wastes concrete and money; if nails are driven into the top of the stakes and a cord pulled taut between stakes, it assists in cutting a uniform width and depth, and the cords can be used also as a guide in placing the concrete. The outside of curves is elevated just as is done in building a highway.

CONCRETE LINING

In mixing the concrete for the lining, a few fundamental rules should be observed to get the best at the least cost. A lean mix and as thin a lining as will last is, of course, the most economical. We are now using a 2″ thick lining with a 1:3:5 mix using a minimum amount of water just to make the mix workable to keep the water-cement ratio low. The 18″ lining has about a 6″ drop from the edges to the center line. When possible to buy or borrow a concrete machine mixer, the work can be speeded up.

If the mixer is placed halfway between, or say 200′ on long stretches from the upper end of the ditch and enough material placed at this point to complete the whole stretch or the first 400′, time will be utilized to best advantage in not having to handle the material and equipment any more than is necessary. The ditch would be poured from the upper end to the downstream end. If the mixer is a large one, two laying crews can be used, with each crew laying 200′ in two sections at the same time.

A chute can be arranged to slide the concrete direct into wheelbarrows from the mixer. Runways placed on the bottom of the ditch, consisting of 2″ boards will prevent the cutting or muddying up of the ditch bottom, as the concrete is wheeled down the ditch to where it is being placed. A thin lining should not be poured on a muddy bottom. Although expansion joints were not used in much of the C.W.A. lining work and there have been no subsequent failures, we are now using about 6 sheets of 2 ply tar paper for joints about every 50′.

On steep grades, especially where the lining is placed on a fill, or where for any other reason the water might be allowed to run under the lining, key walls about every 200′ should be built at right angles and extending under the lining into a solid foundation to stop the flow of water with weep holes on the upstream side to provide outlet for the water after the rain, to seep up onto the lining. (See sketch of key wall).

In some cases where sod was not immediately placed at the edge of the lining, scouring was worse when the edge of the lining was rough. If the sod was immediately placed, the rough edge did not seem to cause any scouring.

CHART I—Sketch of Key Wall

FIGURE V—Section of Madison Heights Bayou looking north toward Court Avenue before cleaning and rip-rap work done

Forms can be used without losing much time making it possible to get a smooth edge. Care should be taken to prevent any honeycombing of the concrete at the edge and the top edge is being slightly rounded.

Even though the lining is not usually subjected to any great pressure, the

FIGURE VI—Same as V after lining bottom and sides and sodding banks

lining should not be allowed to dry out for a day or so, especially in the dry weather, in order to cure properly and prevent scaling off, pitting, or disintegration later on. No reinforcing has been used. As already emphasized, the sod should now be laid on the banks without delay.

SODDING

In sodding, the operation is divided into two steps with a sod cutting and loading crew of 8 to 10 men and a sod laying crew of 2 to 3 men. Sod is cut in strips of approximately 10″ x 12″ x ½″ to 1″ thick. Only thick and pure Bermuda sod is used. If ½″ to 1″ thick sod is cut and laid, the roots will grow 2″ within a few weeks and thus get a firm bull-dog grip on the bank and withstand heavy flood rains, while 2″ or thicker sod takes many days before the roots will extend themselves and grip the bank. If the sod has been cut too thick, heavy tamping after laying will tear loose the sod and roots and encourage more rapid growth of new roots.

Sodding is done both in hot summer weather and in the cold winter weather as the roots will grow even when the top grass does not. The bank should be dressed to a uniform grade and 1″ below the top edge of the concrete lining to support the blanket of sod. The bank should not be cut below the top edge of the lining until the sod is to be laid, as the overhanging slope or bank is a protection against erosion at the concrete lining edge until the sod is laid. If the sod is being laid on a dry bank, the slope should be wet down thoroughly before laying.

As soon as the sod is placed and well tamped with shovels, it should be covered with ½″ of earth which is accumulated from the bank as it is prepared to receive the sod. The sod blanket is extended to the top of the bank and over the top for several inches. We have had very little success with spot sodding, and even when used only on the upper half of the banks, the repairing of the upper half for sodding after damaging rains has convinced us that we should do a complete job at first.

On deep ditches where a 1½ to 1 slope would give a wide top, the bottom width may be increased and a rip-rap wall on a ½ to 1 slope installed to a height of 3 or 4′ and then a 1½ to 1 sodded slope for the rest of the bank will result in a narrower top and still maintain the most desirable slope, 1½ to 1 for dirt or sodded banks.

RIP-RAPPING

The term rip-rapping has been used in our ditching work to mean the use of broken pieces of concrete or stone with one smooth surface, as from a concrete sidewalk, floor, porch, wall or street. Old asphalt has been used but its tendency to crumble when not in use supporting traffic, has influenced us to use it for fill only. Some of our early work was with asphalt, and in years to come we will learn more about its possible use. This rip-rap may be used in big ditches for bottoms and walls or may be used on the sides of a small center concrete lining to increase the bottom width while having a concrete center lining to carry the dry weather flow. Again the rip-rap can be used in many cases to narrow a section of ditch to secure a uniform width, by building a wall and filling behind it. Shallow filling and sodding in place of a wall may be done if the existing bank is first spaded up or turned over to make a good bond between the existing and the new bank just as a roughening of an old concrete surface is necessary to secure good bond with a new layer of concrete. The wall need not be brought to the top of the bank if the bank is sloped and sodded above the wall, with the sod extending over the

top of the wall to the inside edge. In other places shade, due to bridges or trees, may make it necessary to use rip-rap in place of Bermuda. Walls may be used on sharp bends where scouring action is particularly severe.

As indicated above, some of the ditch lining installed by the C.W.A. about a year ago, was not sodded, and in cases considerable scouring and washing has taken place necessitating filling and widening the bottom and building side walls.

In constructing a complete rip-rap lining of walls and bottom, the walls are installed first. It is important in getting a uniform alignment to use slope stakes for the top and bottom and slope of the wall, usually ½ horizontal to 1 vertical. The wall must be carefully constructed to stand and a solid foundation or footing is of first importance. The wall is begun a foot or more, if necessary, below the grade of the ditch to reach a firm foundation of dirt. The pieces of rip-rap are placed with the flat side up, not parallel to the bottom of the ditch, but perpendicular to the slope of the bank, the straightest edge is placed out as a part of the wall surface. At sections of ditch, where the velocity or scouring is severe the wall joints may be filled by slapping and brushing a 1:4 mix of cement mortar into them. Weep holes are left about every 25′ to allow water entrapped behind the wall, especially in fills, to seep out into the ditch.

The bottom is built up or cut to a grade so that the flat face of the rip-rap when placed will meet the final grade line of the ditch lining. If the bottom can be lined when dry, care should be taken to have the dirt bottom firm and well tamped when fill is necessary. If the bottom is lined when the ditch is carrying a flow of water, rip-rap should be used to fill holes and a gravelly or coarse material should be used for fill with the voids filled with dirt. As the rip-rap is laid on the bottom, each piece is placed carefully just as in building a wall, and tamped with the dirt bottom scraped away or added to make the flat piece of rip-rap lay flat and firm and to grade. A man on the bank slides pieces of rip-rap down to a man in the ditch who passes each piece to the rip-rap layer as he needs it. A half dozen or more crews may be placing rip-rap at the same time.

After all of the rip-rap has been placed, a finish man with a helper goes the entire length of the section, tamping and testing each piece to be sure all are firmly placed and to grade. On a wide bottom, a straight edge is used from the center line grade to the side of bottom grade to insure a uniform bottom with a slope to the center line for dry weather flow and no low or high places to cause water to stand.

Gravel and sand can then be brushed into the space between the pieces and tamped to "key up" the lining. A 1:4 mix of cement mortar is then brushed over and into the lining joints.

The sod should be placed on the dirt bank above and over the top of the wall and extend from the inner edge of the ditch walls to several inches over the top of the bank. It is important to tamp and settle the dirt-fill behind the wall to prevent later settling and slipping of the wall in places. If broken stone is used for fill, the voids should be filled with dirt and tamped as the fill is made and then covered with a blanket of sod.

In general, the cost of the concrete lining has run about 10 cents per square foot for material, including the cement, sand and gravel, while in the rip-rap work the only material purchased is cement and sand for grouting, as the broken concrete has been free for the hauling, and this has run about 1 cent per square foot. All sod used has been free. Because of the use of relief labor, no attempt has been made to

show unit costs of excavation or laying concrete, rip-rap, or sod. A total of 5.8 miles of ditches have been stabilized to date and a proposed project is now being submitted for lining and sodding 16.6 miles with an 18" to 24" concrete lining with sodded banks. Rip-rap will be used for walls, etc., where necessary.

SUMMARY

Lining of ditches with concrete and sodding, or with rip-rap material and sodding is being constructed in Memphis with relief labor. A large force of common labor can be used with a small outlay of materials and equipment with a lasting and important influence on health. The maintenance cost is low, flood damage by erosion and loss of public and private property is stopped.

Certain lessons have been learned in constructing approximately 6 miles of ditch lining.

NOTE: The photographs included in this article were made by M. F. Carter, Memphis Health Department.

Pine Board Gavel

WHEN next year's meeting of the Western Branch of the American Public Health Association is called to order at Vancouver, B. C., Dr. W. F. Cogswell of Helena, new president of the organization, will rap sharply on the table with the official permanent gavel of the group—a common piece of Montana yellow pine board.

Rising to an emergency at this year's meeting in Helena in July, Dr. W. P. Shepard of San Francisco, secretary of the association, hurriedly found the piece of board and offered it to Dr. W. H. Brown of Palo Alto, Calif., who was presiding.

The improvised gavel was used at most of the convention sessions and, after Dr. Brown had employed it for the final time during his presidency, Dr. Shepard had the out-going president autograph the board, which was turned over to Dr. Cogswell with instructions to have it available at next year's convention, as then and there it was proclaimed the official gavel of the organization for all future sessions. —*Montana Record Herald,* July 5, 1935.

Measles, Scarlet Fever and Whooping Cough in the Los Angeles County Health Department Area

A Ten Year Study

H. O. SWARTOUT, M.D., DR.P.H.

Assistant Professor of Public Health, College of Medical Evangelists; Emergency and Consultant Physician, Los Angeles County Health Department; Los Angeles, Calif.

THESE three "diseases of childhood" have been studied so long and written about so often that a full list of authors and titles would be bewilderingly lengthy. Nearly everything important that has been published about them has already found its way into the textbooks, with the exception of some recent developments in immunization and treatment. Since these two phases of the subject will be scarcely more than mentioned in this paper, references will be given only to a few standard works on general medicine, whose indexes and bibliographies are readily available to anybody who wishes to follow the study further.

There are several reasons why it seems worth while to present certain facts about the epidemic courses, prevalence, and severity of the three diseases as they have occurred in the Los Angeles County Health Department area.

First, the population is large enough to make the findings significant, having grown from a little less than half to a little more than three-quarters of a million from 1925 to 1934.

Second, the population is both mixed in type and markedly mobile, characteristics which increase the frequency of personal contacts and which, therefore, might lead one to expect a communicable disease morbidity above the average.

Third, the area concerned is virtually sub-tropical, with no weather that can properly be called cold, and with distinct moist and dry seasons, thus differing appreciably from the areas covered by most studies on the same or similar subjects.

Fourth, the area has been under the administration of a well organized health department throughout the period, which insures comparatively dependable statistics.

Fifth, while some of the ascertained facts are in close agreement with general findings and opinions published in textbooks, others show interesting differences.

The statistical data are embodied in a series of charts, a discussion of which will make up the larger part of this paper.

Chart I shows the epidemic waves of the three diseases, based on annual case rates. Blackfan [1] mentions the regularity of measles epidemics as a generally recognized feature of the disease.

Measles, Scarlet Fever and Whooping Cough in the L.A. County Health Department Area, 1925-1934

CHART I.
Annual Case Rates

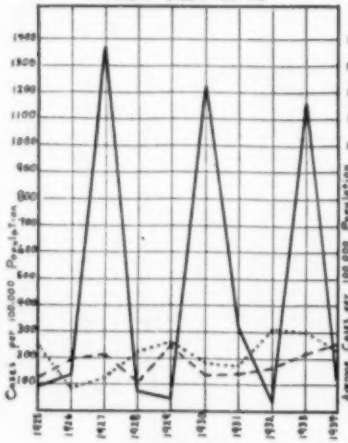


CHART II.
Average Monthly Case Rates

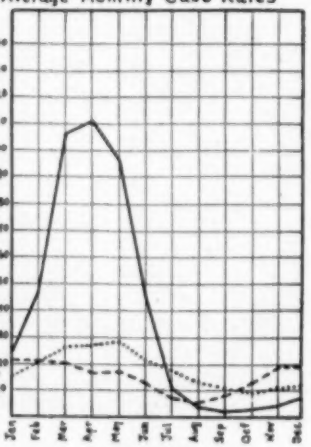


CHART III.
Average Monthly Measles Case Rates for the whole Decade, Epidemic Years, and Non-epidemic Years

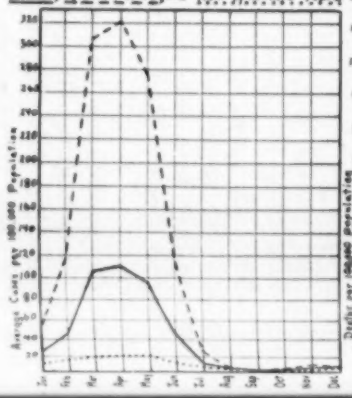


CHART IV.
Annual Death Rates

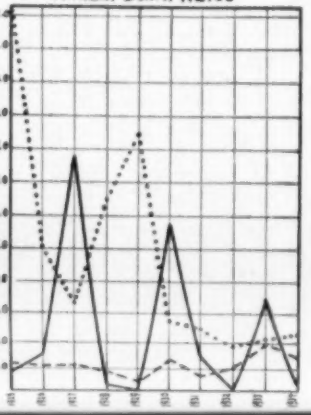


CHART V.
Annual Case Fatality Rates

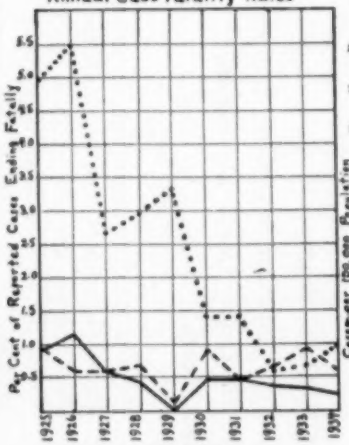


CHART VI.
Average Case Rates by Age-Groups

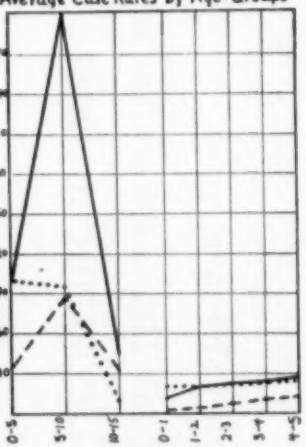


CHART VII.
Average Death Rates by Age-Groups

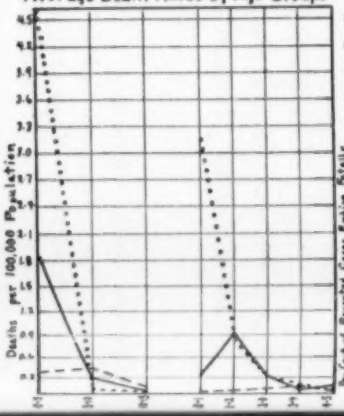
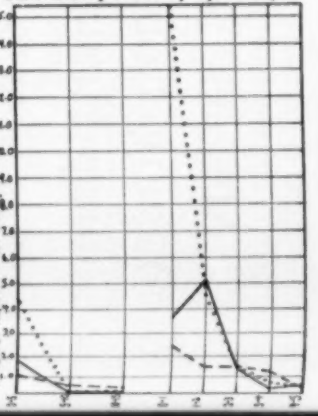
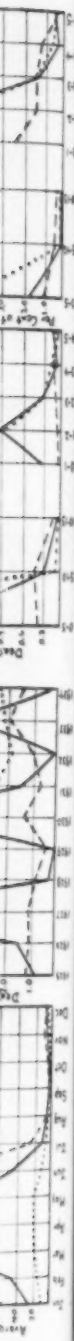


CHART VIII.
Case Fatality Rates by Age-Groups





Los Angeles County data are in agreement with this idea, for measles has been markedly epidemic there at intervals of just three years throughout the past decade. In non-epidemic years the incidence of measles has been very low. If the regularity of the wave persists, 1936 will see another measles epidemic in the county.

Scarlet fever and whooping cough epidemic waves have not shown much regularity, and the difference between the height of their crests and the depth of their troughs has not been marked. Scarlet fever peaks of moderate height occurred in 1926–1927, 1929 and 1933–1934. The whooping cough peaks came in 1925, 1929 and 1932–1933.

Chart I seems to say that little has been accomplished toward reducing the prevalence of measles, and that scarlet fever and whooping cough are becoming more prevalent. The chart, of course, is subject to the error of incomplete reporting. Those competent to judge hold that both measles and scarlet fever reporting in the area have been very good for at least ten years. Whooping cough reporting is not so good, but it is better now than it used to be ten years ago. The testimony of Chart I, therefore, is acceptable in a general way with regard to measles and scarlet fever, though it is possibly wrong in indicating an increasing prevalence for whooping cough.

Chart II shows seasonal variation in incidence by means of average monthly case rates.

While averages for corresponding months of the 10 years do not necessarily show that relatively high rates characterized the same months for most of the years, such, in fact, was true. In Los Angeles County it has been uncommon for the epidemic peaks of measles, scarlet fever, or whooping cough to occur at any other times in the year than those corresponding to the peaks in Chart II.

With respect to measles, Stevens [2] states that the maximum intensity of epidemics is usually in the winter months; Strong [3] says the seasonal incidence varies slightly in different latitudes, but is usually greatest from December to May; and Blackfan [1] puts the greatest frequency of epidemics in winter and spring. In Los Angeles County, the greatest intensity of measles epidemics has been quite regularly between February and June, with the peak in April.

Chart III indicates that epidemic years did not dominate the measles picture with respect to seasonal incidence. The curve of measles cases for the 7 non-epidemic years rose and fell during the same months as did that for the 3 epidemic years.

It would seem that measles, generally called one of the most contagious of all diseases, should spread most rapidly when people, especially children, congregate most frequently. This thought points to the opening of school in September as the time when the measles curve should begin to rise. It does, in fact, do so; but the rise is gradual for 3 or 4 months, a longer lag than would probably occur if contagion alone were concerned. The remarkable seasonal regularity of the measles curve in Los Angeles County forces a consideration of the influence of the weather. Temperature is not the only weather factor, for the coming of cool days in November or early December does not cause a marked increase in the incidence of measles in the area. The decided upturn of the curve does, however, coincide quite closely with the early part of the rainy season, which, on the average, is well under way by the first of January. This noticeable coincidence with a season combining dampness and chilliness supports the idea of those who hold that conditions predisposing to upper respiratory infections are important factors in the rapid spread of measles.

Referring again to Chart II, it is interesting to note the combined influence of the school session and a cool and damp season on the curve of scarlet fever, the school session in this case being apparently the more significant of the two. Helmholz [4] also makes special mention of school term coincidence. This feature would seem to place great emphasis on contagion in connection with scarlet fever; yet it is generally considered much less contagious than either measles or whooping cough, whose curves of incidence in Los Angeles County do not follow the school term nearly so closely as does that of scarlet fever.

Stevens [5] says that whooping cough is more severe, though not more common, in winter and spring. Levy [6] says it is especially liable to occur during cold seasons. Holt [7] places its prevalence mostly in winter and spring. In Los Angeles County, the seasonal curve of whooping cough is somewhat different from what these authorities would lead one to expect. Neither weather predisposing to upper respiratory infections nor attendance at school with its marked influence on contagion seems to affect the curve as promptly as would seem reasonable. The peak comes near the end of the school year, and when the weather is comparatively warm and dry.

Chart IV is an encouraging picture in some respects. It shows that while the annual death rate from scarlet fever in Los Angeles County is a little higher than it was a decade ago, measles is somewhat less of a menace to life than it was then, and whooping cough much less so. Whooping cough, however, is not much less of a life peril now than it was 4 years ago; and it still takes a larger toll year by year, on the average, than either measles or scarlet fever.

Chart V is a good measure of the relative severity of the three diseases. In it, again, scarlet fever gives no grounds for satisfaction; but the measles curve shows that this disease has been growing definitely less deadly. As to whooping cough, while nearly 5 per cent of those reported to have the disease in 1925 died of it, and more than 5 per cent in 1926, during each of the past 3 years less than 1 per cent of the reported cases ended fatally. What has caused so marked an improvement is not clear. There has doubtless been some gain in the quality of medical and nursing care, though the depression has surely cut down on the quantity and there has been some increase in the use of pertussis vaccine, though not much; but neither of these factors nor a combination of them is at all commensurate with the decrease in whooping cough case fatality in Los Angeles County.

According to a composite view of statements from the authors already named, measles mortality, under favorable surroundings and averaged for all ages, runs from 3 to 6 per cent. In Los Angeles County, in only 1 year in the past decade did it go above 1 per cent, in 6 other years it was less than ½ per cent, and in 1929 it was zero.

A similar study of scarlet fever leads one to expect a mortality of from 1 to 8 per cent, but in Los Angeles County it has never reached as high as 1 per cent during the past 10 years.

Stevens [5] gives whooping cough a reputed mortality of from 3 to 10 per cent. In Los Angeles County, only 3 years in the last 10 saw a whooping cough mortality above 3 per cent; and for the past 3 years it has been below 1 per cent.

In general, the severity of the three childhood diseases — measles, scarlet fever, and whooping cough — as they occur in the Los Angeles County Health Department area, is evidently below the average for the other localities that have been studied. In the case of measles and whooping cough, this severity is definitely declining. The

data, however, do not indicate that the virulence of the streptococci causative of scarlet fever is decreasing in that area, a condition which has been suggested as possibly obtaining in our country as a whole.

Chart VI shows how age affected the incidence of the three diseases. Both measles and scarlet fever showed a fairly steady increase during the first 5 years of life. Multiplying opportunities for contagion as the children widened the circle of their activities and added to the number of their playmates may have been enough to account for this increase. With whooping cough, the incidence ran nearly the same for each of the first 5 years, though the factor of increased likelihood of exposure was as great as in the case of the other two diseases. The total number of cases reported for the first 5 year age group was almost exactly the same as for measles, indicating that the number of susceptibles in the population did not differ much for these two diseases. A study of all these findings leads one to wonder if there is not something in the idea that some not fully demonstrated physical condition or change makes children individually less susceptible to whooping cough as they grow older.

Decreased susceptibility to whooping cough continued to manifest itself during the second 5 years of life, when by entrance to school the chance of contagion greatly increased. In this respect, measles and scarlet fever told a very different story, for school entrance brought a sharp rise in their incidence.

The markedly decreased incidence of all three diseases during the third 5 years of life might plausibly be accounted for by the guess that such a large proportion of the population had already had them that few susceptibles were left. Comparing the average annual number of reported cases in children under 10 years of age with the average annual number of new susceptibles born into the population with an expectancy of living to the age of 10 years gives an approximate estimate of the comparative numbers of susceptibles and nonsusceptibles in the population 10 years old or over, among whom records show that the number of cases is almost negligible. Such an estimate leads to the conclusion that at least two-thirds of the population of Los Angeles County over 10 should still be susceptible to measles, at least five-sixths to whooping cough, and at least seven-eighths to scarlet fever. It is incredible that such large proportions of susceptibles should really exist, at least in the case of measles, in view of the known instances where this disease has attacked nearly every member, old or young, of a community which it has invaded after being absent from it a generation or two.

A large number of unreported cases would help to explain this anomaly; but the Chief of the Bureau of Communicable Diseases of the Los Angeles County Health Department believes that reporting has been 90 per cent or better for measles, 95 per cent or better for scarlet fever, and is now 75 per cent or better for whooping cough, though it may have been as low as 50 per cent 10 years ago. At least three pertinent questions, therefore, are left unanswered: Have there been many "missed cases"—no diagnosis having been made? Has a considerable degree of immunity in people supposedly susceptible been developed as a result of exposures that did not lead to detectable symptoms? Do people in lands where the diseases are more or less endemic naturally become more nearly immune to measles, scarlet fever, and especially whooping cough, as they grow older?

Chart VII gives an idea of the varying life toll taken by the three diseases as they affected people of different ages. Measles has taken its largest

number of lives during the 2nd year of life, scarlet fever during the 4th, and whooping cough outstandingly so during the 1st. For children under 5, whooping cough has been by far the greatest killer of the three.

Chart VIII combines the factors of incidence and comparative danger to life, giving an idea of the chance children of different ages had of living or dying if attacked. Here, again, measles showed a peak during the 2nd year. It not only took a larger number of lives at that age, but killed a larger percentage of the children who had it. Scarlet fever, though more common in all later years up to 10, was more fatal in the 1st year. Whooping cough was extremely fatal during the first year of life. It ran about even with measles during the next 4 years. None of the three diseases was very serious in children over 10, but scarlet fever was considerably more so than either of the other two.

Textbook statements are in general agreement with what is shown by Charts VII and VIII.

CONCLUSION

It may be said that the records of measles, scarlet fever, and whooping cough during the past decade in the Los Angeles County Health Department area indicate that:

1. Climate and season have had considerable influence upon the incidence of the diseases, and have tended to make the peaks of the epidemic waves come unusually late, especially for measles and whooping cough.

2. Exposure by personal contact may have played a greater rôle in the incidence of scarlet fever than textbook discussions would lead one to expect, and a lesser rôle in the incidence of whooping cough.

3. Case fatality rates for all three diseases have been very low. They are apparently not so great a menace to life in a subtropical area as they are in colder regions.

4. The streptococci causative of scarlet fever do not appear to be growing less virulent in the Los Angeles County Health Department area.

5. Natural susceptibility, decreasing with age, may have been an important factor in incidence, especially in the case of whooping cough.

6. Judging from the numbers of reported cases, an almost incredibly large proportion of the population over 10 years of age should still have been susceptible to measles, scarlet fever, or whooping cough. Why more people above 10 did not contract these diseases has not yet been clearly explained.

7. Below the age of 5, whooping cough was by far the greatest killer of the three; and above the age of 10, scarlet fever.

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Experts Wrong and Genuine

THERE is always a certain attraction about the wrong kind of expert, about going to the man who knows nothing about it, because you are afraid if you get a genuine expert his opinion would go against you, as indeed it very often would.—*Bernard Shaw.*

The Teaching of Epidemiology by Applicatory Problems

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INSTRUCTION in the subject of applied epidemiology is obviously handicapped by certain inherent difficulties of presentation. While other branches of the medical curriculum may have their didactic teaching concretely demonstrated by laboratory procedure or illustrated in appropriate relation by clinical cases, the same is not true in respect to epidemiology. Epidemic outbreaks of communicable disease cannot be created for purposes of pedagogy; and where these have naturally occurred the conditions are habitually such that the resulting problems can scarcely be brought into the classroom for current solution.

Accordingly, much of the instruction in epidemiology is necessarily didactic and of a general nature; and the tendency is, in the formulation of test questions, to determine what amount of the information so given has been retained. This, so far as it goes, is of course desirable.

But for practical purposes it is quite as important to determine the ways and degrees in which the information so given is applied by the student—for after all the only real value of education lies in the practical use which is made of it. The whole purpose of instruction is to bring about prepared reactions to certain conditions liable to occur in the future. So far as epidemiology is concerned, such prepared reactions will rest on the known biological facts pertaining to the organisms concerned, and as affected by environmental conditions.

After the foundation of facts and methods has been didactically laid, any further development of epidemiology depends upon their practical application in the study and solution of problems. These problems may be hypothetical, or they may be cross-sections of some actual epidemiological occurrence. The former are demonstrably more adapted to teaching purposes. Past epidemics may be studied as abstract situations, but they lack the vivifying interest that attaches to the solution of a present emergency. Further, their actual conditions may not lend themselves to certain epidemiological features which it is desired to demonstrate. Finally, in such study, the tendency is merely to call attention to the channels of procedure which were actually employed, and particularly to those which led to a positive solution. Taught in this way, applied epidemiology requires nothing of the student in respect to the formulation by him of working hypotheses adapted to the specific conditions, and the pursuit of such hypotheses to their logical conclusion.

On the other hand, an artificially pre-

pared problem has no limitations which might interfere with the presentation of any phases which it may be desired to illustrate—just so that the situations assumed are logical and in accordance with accepted scientific facts. Such problems may be wholly synthetic, or they may be drawn up on the basis of an actual occurrence. However, there is no real teaching advantage in the latter, for a properly prepared hypothetical problem may be made equally realistic.

Problems may be classified as those which are static, usually representing a single situation intermediate in what has gone before and what is yet to come; and continuing problems, which comprise a series of coördinated situations, leading progressively to an ultimate conclusion.

A static problem must contain within itself appropriate factors and data to give a sufficient epidemiological picture, and is to be solved on the basis of an unchanging situation. It implies the selection of the single hypothesis best conforming to the announced data, and the formulation of a solution based thereon. Under such conditions, the factor of uncertainty as to procedure due to possible change in the situation is eliminated; and with the long time-factor usually allowed the student for solution, rapidity of thinking as well as selective use of the reasoning powers is ordinarily not a requirement. Such a restricted problem corresponds to the "map problem" which forms a part of the early training of army officers in the principles of tactics. In both instances such limited problems serve a very valuable purpose for elementary presentation—but they do not go far enough for the more advanced instruction.

The continuing problem is drawn so as to develop gradually through a series of progressive, correlated and logical phases. In it, the element of uncertainty is present up to the final decision and action; the qualities of reason, evaluation, and deduction must be constantly in operation; and suitable procedures must be progressively outlined in the absence of any positive knowledge as to the changing situations which may develop. Such a continuing problem is like an army "war game," in which appropriate action must be taken with each shift of the controlling conditions.

By reason of his military training, the writer is necessarily conversant with the methods of preparation, conduction, and solution of army war games, and has adapted their principles to epidemiological problems. The results have been so practical and satisfactory, as shown by experience in this medical school, as to warrant their description to those who might be interested. Further, there seems reason to believe that the method may be useful in other branches of medical science having a changing picture, as in diagnosis, therapeusis, and prognosis.

In the Medical School of the University of California, the solution of such continuing epidemiological problems comes in the senior year, toward the end of the general course in preventive medicine, requiring the student to make specific application of the general principles already laid down. These problems greatly interest the class, and are probably the most popular exercises of the whole 3 year course. The gradual development of their solution has all the fascination of following through a mystery or detective story—and, in fact, the same general principles of logical sequence, relationship, evaluation, and inference are applicable in both instances. For the demonstration of such principles, one might even go so far as to recommend such stories as "The Adventures of Sherlock Holmes" as collateral reading in relation to applied epidemiology.

The preparation of an illustrative epidemiological problem is something of an art. The instructor, while restricted to scientific facts, must use a logical imagination in their selection and relation, and should endeavor to vivify and dramatize their presentation. The formulation of the problem depends, as to its character and phases, upon the requirements which it is desired to develop; and the nature and sequence of its successive situations are assumed and presented with that purpose in mind.

As with the writing of mystery stories, it is probably easier to decide first upon the climax and denouement, and write them out in the form of the solution contemplated. With this predetermined ending in mind, the instructor now works back and prepares as many antecedent and correlated situations as may be desired. Each such situation is so drawn as to bring out the points which it is desired to illustrate; and is followed either immediately or later by the correlated facts and the inference or conclusion based thereon. Finally, a preamble in the form of a "general situation" is drawn up as the basis of the problem, in such broad general terms as to permit of the various developments and changes which have been prepared to follow. The sample problem given herewith illustrates the possible diversity of presentation along the lines of development chosen; but it would have been equally possible to have changed its several sequent phases so as to make them demonstrate quite different situations, lines of procedure, and end-result.

For the development of such a continuing problem in the class-room a special procedure is essential.

1. It is presented to the class for solution as a series of coördinated situations, each of which is followed by an outline of its appropriate solution. This is done by the use of consecutive lantern slides, each of which pertains exclusively to a special phase or situation.

2. The class, both individually and collectively, solves each of these situations as it is thrown on the screen. This is done by designating a student as principal to make the initial statement as to what should be done under the prescribed circumstances and another student as alternate to amplify or comment upon such initial statement. The class as a whole is then called upon for comment and criticism upon both statements.

At the expiration of the time-limit for the phase in question, its approved solution is then shown on the screen, and is open to general inquiry or comment by the class as a whole.

3. A time-factor governs the solution of the problem. For such a problem as is shown herewith, approximately 4 minutes is allowed for each separate phase. This 4 minute period is subdivided about as follows: 1 minute for general consideration, 1 minute for the answer by the principal, 1 minute for comment by the alternate, and 1 minute for discussion by the class. In practice, the general discussion usually figures out at more than 1 minute, as the principal and alternate do not ordinarily consume their full allotted time.

The imposition of a restricted time-factor has a very definite teaching value; not only moving the problem along steadily, but requiring the student to think rapidly as well as accurately. Experience shows that very satisfactory results are attained within the relatively brief period allowed for consideration.

4. Besides his answer, the student is expected to outline briefly the reasoning by which he reached his conclusion. This implies the enumeration as well as application of any facts considered as pertinent, and is a valuable training in

logical deduction. It also suggests points for consideration and discussion by the class.

The limitations of both lantern slide space and time-factor require succinct presentation of the basic ideas appropriate. The student must be brief and to the point, and generalizations and alternative procedures are not acceptable.

5. The instructor takes no part in the problem, other than to see that the time-factor is maintained, to raise inquiries as to deductions, and to answer briefly questions as to the approved solutions.

6. The method secures the maintenance of the most intense attention and interest by every member of the class, for each is liable to be called upon for his own opinion at any stage of the problem.

The following problem, which is based on an actual epidemiological occurrence, is offered as an example of practical possibilities of such exercises.

EPIDEMIOLOGICAL PROBLEM—TYPHOID FEVER

General premises—

You are the Health Officer of a California city of about 25,000 population, and must do your epidemiological work yourself.

Disposal of excreta is by sewers; except in the suburbs, where a moderate number of privy vaults are in use. The water supply comes from a stream that is unsafe; but has an efficient chlorinating apparatus, which is checked by the laboratory every Tuesday and Friday. About two-thirds of the milk sold in the city is pasteurized. No typhoid case has been reported during the past 6 months.

First situation—December 1—

The following card has just been received by you:

REPORTABLE DISEASES

Anthrax
Bari-Beri
Botulism
Chickenpox
Cholera (Asiatic)
Cerebrospinal Meningitis
*Diphtheria
Dysentery (Amoebic)
Dysentery (Bacillary)
*Encephalitis (Epidemic)
Erysipelas
Fluke Infections
Food poisoning
German Measles
Glanders
†Gonococcus Infection
Hookworm Infection
Influenza
Jaundice (Epidemic)
*Leprosy
Malaria
Measles
*Meningitis (Epidemic)
Mumps
Ophthalmia Neonatorum
Pellagra
Paratyphoid Fever
*Plague
Pneumonia (Lobar)
*Poliomyelitis (Acute Anterior)
Rabies
Relapsing Fever
Rocky Mountain Spotted Fever
*Scarlet Fever
Septic Sore Throat
*Smallpox
†Syphilis
Tetanus
Trachoma
Trichinosis
†Tuberculosis
Tularemia
*Typhoid Fever
*Typhus Fever
Undulant Fever
Whooping Cough
*Yellow Fever

*Quarantinable. †Use Special Card.

REPORT OF A CASE OF COMMUNICABLE DISEASE
MAIL THIS CARD IMMEDIATELY. NO POSTAGE REQUIRED.
USE THIS SIDE TO REPORT ONE CASE ONLY.

Place and date -- City, Dec. 1, 193-
Disease Typhoid fever Onset About Nov. 27.
Name of patient John Smith Age 27
Address of patient 121 First Ave. Race White
~~School attended~~ ——— Employed at 211 Green St.
Probable source of infection unknown
Vaccination history:
~~If smallpox, when successfully vaccinated~~
~~If diphtheria, how many doses~~ ~~(toxin-antitoxin~~ ~~Date~~
~~toxoid~~ ~~Date~~
If typhoid, how many doses None When —— Where ——
Remarks: Agglutination positive. Large family in poor circumstances.
I first saw this patient at 4 P.M., o'clock on Nov. 29.
Signature of physician A. Goodman
2—0000 Address of physician 44 Main St.

What immediate steps by you are indicated?

Answer to First Situation—

1. The case being a positive focus, it should be handled first.

2. Remove and confine the infection by hospitalizing and quarantining John Smith.

3. Destroy any potential intermediate foci by terminal disinfection of all objects liable to have been contaminated by the patient.

Second Situation—December 1—

John Smith has a wife and 4 children. None of them gives a history of previous typhoid.

What are you going to do about them?

Answer to Second Situation—

Start their immunization at once by a course of antityphoid inoculation.

Third Situation—December 1—

"Doctor," Mrs. Smith asks you, "how do you suppose John might have caught his typhoid?"

Answer to Third Situation—

"Well, Mrs. Smith," you reply, "nobody *catches* typhoid fever—he *swallows* it!"

"John could have been infected by direct contact with a case or carrier; or indirectly through contaminated water or food. Flies may carry the infection—but at this time of the year the flies could not be a factor in John's case."

Fourth Situation—December 1—

Diligent inquiry fails to reveal any probable local source of John's infection.

It develops, however, that on November 13 and 14 he was hunting at a ranch some 20 miles out of town, where the drinking water came from a shallow well.

What may you infer?

Answer to Fourth Situation—

You can make no definite inference.

Because of the wide limits of the incubation period of typhoid, it was possible for John to have acquired his infection either in his home town or at the ranch.

Fifth Situation—December 2—

James Jones has just been reported as a typhoid case, with onset about November 28.

It develops that he is a great friend of John Smith. They work at the same place; lunch together at Restaurant A; and were on the same hunting trip at the ranch.

What are now your inferences and actions?

Answer to Fifth Situation—

1. *Inferences* as to possible alternative sources of both infections remain unchanged.

2. *Actions—*

a. Telephone County Health Officer to ascertain antecedents of ranch as to typhoid fever.

b. Investigate conditions at place of work of Smith and Jones.

c. Investigate conditions at Restaurant A.

d. Determine source of milk supply of Restaurant A.

e. Check laboratory reports on local water supply.

Sixth Situation—December 2—

The County Health Officer reports no previous typhoid at the ranch. Conditions at the Smith-Jones place of business seem satisfactory. Restaurant A reports a new cook hired on November 1, who admits typhoid a year ago. Its milk supply comes from Dairy B, and is not pasteurized. Laboratory reports of water analyses since September 1 show no positive *B. coli.*

What may now be potential sources and what will you do about them?

Answer to Sixth Situation—

1. The new cook in Restaurant A may be a possible carrier. He will be cultured, and ordered to stop work until laboratory results have been received.

2. The milk supply may be at fault. Conditions at Dairy B will be investigated.

3. The ranch well still remains a possibility.

4. No evidence incriminates the city water supply.

5. Flies can be definitely excluded from the problem.

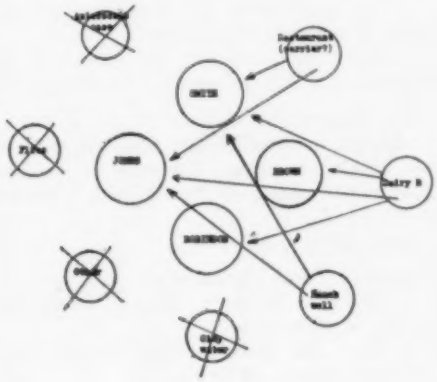
Seventh Situation—December 2—

Your representative who inspected Dairy B reports conditions as apparently satisfactory.

Reports have just come in of 2 new cases (Brown and Robinson) as having developed about November 29. Both used Dairy B milk. No other connection between them, or with the Smith and Jones cases, can be traced.

On the basis of information so far received, you roughly sketch out relationships as shown in Figure I.

FIGURE I



What are your inferences and actions?

Answer to Seventh Situation—

1. The practically simultaneous occurrence in 4 users of milk from Dairy B is suggestive.

2. Prohibit sale of this milk until further notice, unless pasteurized.

3. Order the dairy operatives cultured, and warn them as to all necessary precautions.

4. Telephone all physicians that 4 typhoids have occurred, and to be on the look-out for others.

Eighth Situation—December 3—

Six new cases, widely scattered, are reported today, with onset as of about November 30. Only 2 of them have used milk from Dairy B. None of them—nor the Brown and Robinson cases—were out of town during November.

What may you now infer?

Answer to Eighth Situation—

1. Since only the Smith and Jones cases have been out of town during the incubation period, the last 8 cases must have a local source.

2. Dairy B milk remains under suspicion, for 6 of the 10 cases have used it.

3. Laboratory reports on cultures from the restaurant cook and dairy employees are awaited.

Ninth Situation—December 4—

Twelve new cases are reported today, as having developed about December 1. Only 1 of them used Dairy B milk. The laboratory reports that cultures from the cook at Restaurant A, and from the employees of Dairy B, are so far negative.

What are now your inferences?

Answer to Ninth Situation—

1. That the infection in over 90 per cent of cases must have been acquired locally.

2. That some other source than milk from Dairy B must be looked for.

3. That the possibility of a carrier in Restaurant A can presumably be eliminated.

Tenth Situation—December 5

Eighteen cases are today reported as having developed about December 2. Your chart of the course of the outbreak is shown in Figure II.

How will you interpret it?

Answer to Tenth Situation—

1. That the infection invaded about the middle of November.

2. That the invasion was abrupt, and probably from a single source.

3. That its concentration was probably considerable.

4. That there was some common vehicle of distribution.

5. That this vehicle had a more general and wider distribution than unpasteurized milk.

6. That the only other vehicle satisfying the requirements is the city water supply.

7. That the antecedents of this water should be rechecked.

Eleventh Situation—December 5—

You question the man at the water purification plant. "Tell me exactly," you demand, "what happened to your chlorinization apparatus about a fortnight ago!"

Under pressure, he admits: "Well, you see, Doctor, late on a Saturday afternoon—I think it was November 18—I found that the cylinders had run out of gas, and I couldn't get a new supply until Monday morning."

What are now your conclusions?

Answer to Eleventh Situation—

1. That raw water, known to be habitually unsafe, was distributed to the community for nearly 2 days.

2. That laboratory tests were too infrequent to discover it.

3. That so far as the epidemic is concerned, all other hypothetical sources can safely be disregarded.

Twelfth Situation—December 5—

What statement of public assurance are you now in position to make to the community?

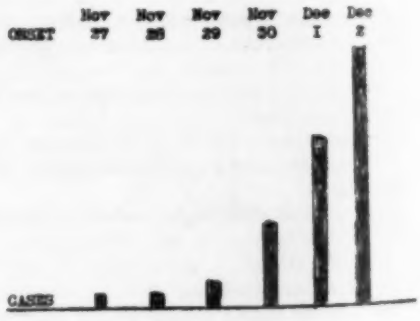
Answer to Twelfth Situation—

Your knowledge that the infection began on November 18, and continued for a couple of days, introduces a definite time-factor into your problem.

You are accordingly in position to say:

1. That the source of the typhoid outbreak has been determined.

FIGURE II



2. That it was an infected water supply, resulting from temporary lack of chlorinization.

3. That this water was shortly—and is now—again safe for use.

4. That the epidemic has now probably about reached its peak.

5. However, that cases in waning numbers, from the infection now incubating, may be expected to develop for about another week.

SOME EPIDEMIOLOGICAL AXIOMS

1. Hasty assumptions may give rise to erroneous conclusions.

2. The interpretation and evaluation of evidence may be more important than its temporary volume.

3. The *course* of an epidemic often suggests its probable *source*.

COMMENT

The foregoing problem was formulated with the purpose of bringing certain definite factors, which had been decided upon in advance, into logical interplay in relation to public health. Among these are the general sanitary conditions which might be expected in a small city; the use of the official notification card in reporting a case of typhoid fever; initial health requirements based on such report; immunization of close contacts; ways by which typhoid infection may be acquired; the incubation period, the time element, and the factor of season; various potential sources of infection, as case, carrier, well or city water, restaurant, milk, flies; inquiries and inspections to be instituted, including laboratory investigations; the formulation of working hypotheses; effect of accruing evidence, both positive and negative, on the relative values of these hypotheses; appearance of further cases, and trend toward epidemic; inquiry with graph as to possible relationship between cases and potential sources; warning of the profession as to liability to outbreak; rapid development of epidemic conditions, with distribution of cases; discarding of hypotheses as they become untenable, and the strengthening of others; the sudden development of an epidemic; interpretation of its graph in respect to probable source; aid of statistical charts in epidemiological diagnosis; basic importance of verifying contributing data; the element of human frailty as possibly a determining factor in health problems; the need and nature of reassurance of the community; epidemiological axioms illustrated by the developmental procedure.

Analysis of the various situations of the foregoing problem shows that all these major factors in epidemiology, with others, are brought out and briefly demonstrated by them in appropriate sequence and ultimate logical perspective.

Eosin Methylene Blue Agar for Rapid Direct Count of E. coli

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SCHULHOFF [1] working with *E. typhi* in sewage, perfected a method of obtaining excellent colony distribution of surface growth on brilliant green agar. We have applied this method to counting *E. coli* using eosin methylene blue agar as a medium.

Eosin methylene blue agar with and without crystal violet (1–100,000) were compared and it was found (Table I) that although the presence of crystal violet cut down the contaminants it also cut the colon numbers to an extent that would prohibit its use as a direct counting medium.

TABLE I

EFFECT OF CRYSTAL VIOLET ON THE RECOVERY OF E. COLI FROM EOSIN METHYLENE BLUE SMEAR PLATES

	E. coli per c.c.	
Media	*Sewage*	*Pure Culture*
Eosin Methylene Blue	110,000	3,780,000
Eosin Methylene Blue + Crystal Violet (1:100,000)	51,000	1,810,000
Brilliant Green Bile Broth	95,000	3,500,000

METHOD

Eosin methylene blue agar is prepared according to the standard method except that the use of 2 per cent rather than the usual 1.5 per cent of agar gives a firmer surface for smearing. Plates are poured to a depth of about 3 mm. Too thin a layer leads to the drying out of media if left in the incubator too long during drying process and spreading of the inoculum under the medium.

One c.c. of the inoculum is run on the surface of the medium and smeared with the pipette so that the entire surface is covered. The plate is then tilted back and forth several times, thus running inoculum over the surface and obtaining a more even distribution.

The plate is placed in a 37° C. incubator and the cover removed. Drying of the inoculum occurs in about 1 hour. To obtain perfect distribution it it is necessary to tilt the plate, as done at start, when the plate is about half dry.

When the surface is thoroughly dry, the plate is closed, inverted, incubated 24 hours, and characteristic colonies are counted.[2]

Contamination from leaving the agar surface exposed in the incubator was practically nil in incubators which were not particularly clean. Only 2, small non-colon colonies were observed on the 50 control plates run. The dyes present in the medium evidently inhibit bacteria which may be deposited on the agar surface with the dust from the air.

Excellent distribution of colonies was obtained by this method. However, in most cases it was not advisable to count plates containing many more than 100 colonies, for when too heavy inoculum is used a growth is likely to occur be-

TABLE II

COMPARISON OF RECOVERY OF A PURE CULTURE OF E. COLI FROM PLAIN AGAR, BRILLIANT GREEN BILE BROTH AND EOSIN METHYLENE BLUE SMEAR AGAR

E. coli Thousands per c.c.

Test No.	Plain Agar Av. 3 Plates	Brilliant Green Bile Broth Av. 5 Tubes	Eosin Methylene Blue Agar Av. 3 Plates
1	4,600	3,500	3,700
2	174	150	163
3	306	250	288
4	121	100	109
Mean	1,300	1,000	1,063
Per Cent of Agar Count		77	82

tween the edge of the plate and the medium, causing a mass of gas bubbles and colonies difficult of differentiation. Plates containing between 30 and 100 *E. coli* colonies give the most consistent counts. An additional 24 hours' incubation gave no higher count and usually over-growth spoiled the plate.

DATA AND RESULTS

As we were interested in applying this method to sewage in various stages of treatment, and heavily polluted waters, comparative counts were made against the brilliant green bile broth count which has been found to be a very satisfactory counting method for *E. coli* due to the high percentage of confirmation obtainable. Its disadvantages are that 48 hours' incubation time is required and that the final results are only rough approximation of the number present. The variation may be wide on account of the significance given to one tube by the probability tables.

The first work done was with a pure *E. coli* suspension. Counts were made in brilliant green bile, plain agar, and on eosin methylene blue agar. Judging from Table II, eosin methylene blue agar is no more inhibitive than brilliant green and should provide a satisfactory counting medium for *E. coli*.

Table III gives the comparative counts on sewages by the eosin methylene blue smear plate method and brilliant green bile broth tube method on 19 different sewages from 8 plants. The results show a close agreement of the counts by the two methods. In

TABLE III

COMPARISON OF THE RECOVERY OF E. COLI FROM SEWAGES BY EOSIN METHYLENE BLUE SMEAR AGAR AND BRILLIANT GREEN BILE BROTH

Sewage Sample	Eosin Methylene Blue Agar Av. of 3 Plates	Brilliant Green Bile Broth Av. of 3 Tubes
	Thousands per c.c.	Thousands per c.c.
1	38	25
2	75	45
3	79	25
4	91	75
5	100	68
6	106	95
7	110	95
8	124	150
9	130	100
10	134	95
11	161	250
12	162	250
13	163	150
14	166	150
15	200	250
16	220	250
17	260	250
18	285	250
19	458	450
Average	168	165

13 cases out of 19 the counts by the eosin methylene blue agar method were higher than brilliant green broth bile.

TABLE IV

COMPARISON OF THE RECOVERY OF E. COLI FROM POLLUTED WATERS BY EOSIN METHYLENE BLUE AGAR AND BRILLIANT GREEN BILE BROTH

	E. coli per c.c.	
	Eosin Methylene Blue Agar	*Brilliant Green Bile Broth*
Sample	*Av. of 3 Plates*	*Av. of 3 Tubes*
1	330	150
2	1,800	900
3	2,300	2,500
4	3,300	4,500
5	5,300	2,500
6	7,700	4,500
7	530	450
Average	3,037	2,214

Table IV gives a comparison of the counts obtained by the 2 methods from polluted waters. Here the average by the eosin methylene blue agar is appreciably higher than by brilliant green broth tube, and in 5 cases out of 7 the counts were higher by the former method than by the latter.

The method was compared with brilliant green bile broth in determining the *E. coli* removal of various treatment units in a sewage plant. The results in Table V show a close agreement by the two methods. In most cases the eosin methylene blue count was higher.

Table VI gives the results of a similar study from the different parts of an aeration tank of an activated sludge plant and of returned sludge. The agreements by the eosin methylene blue agar and brilliant green broth bile are again close.

CONCLUSION

The results so far obtained indicate that the eosin methylene blue smear plate method is satisfactory for direct rapid *E. coli* enumeration. The outstanding advantages are as follows:

1. Confirmed results in 24 hours
2. Less work involved

TABLE V

COMPARISON OF REMOVALS OF E. COLI BY THE DIFFERENT UNITS OF SEWAGE TREATMENT PLANT BY EOSIN METHYLENE BLUE AGAR AND BRILLIANT GREEN BILE BROTH

	E. coli per c.c.					
Media	*Raw*	*After Settling*	*After Trickling Filter*	*After Secondary Sedimentation*	*After Chlorination*	*Stream Below*
Eosin Methylene Blue Agar	207,000	137,000	3,800	10,000	330	12
Brilliant Green Bile Broth	172,000	147,000	2,500	7,000	250	9

TABLE VI

E. COLI BY THE EOSIN METHYLENE BLUE AGAR AND BRILLIANT GREEN BILE BROTH IN ACTIVATED SLUDGE

	E. coli per c.c.		
	Sample	*Eosin Methylene Blue Agar*	*Brilliant Green Broth Bile*
Aeration Tank Samples:	Inlet	26,000	25,000
	Center	7,000	6,000
	Outlet	3,300	3,500
Return Sludge:	Hillsdale	10,600	11,000
	Tenafly	185,000	250,000
	Tenafly	173,000	150,000

3. Less equipment required
4. Media cheaper and easier to prepare
5. Comparable counts are obtained with brilliant green broth bile.

This method has been found to be particularly adaptable to sewage plant control and sewage research. Application of this method to river waters not heavily polluted appears possible. In this work a comparison should be made with lactose broth with eosin methylene blue confirmation to see if the inaccurate, cumbersome enrichment count may be omitted entirely.

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N.T.A. Meeting in Saranac Lake, N. Y.

THE thirty-first annual meeting of the National Tuberculosis Association was held in Saranac Lake, N. Y., June 24–27, celebrating the fiftieth anniversary of the opening of the "Little Red" cottage, which is still preserved on the grounds of Trudeau Sanatorium. The modern treatment of tuberculosis in the United States was begun here by Dr. Edward Livingston Trudeau in 1885. The occasion provided a setting for a dedication of the cottage on the afternoon of June 25 with hundreds of delegates gathered on the lawn to witness the presentation of a bronze plaque by Dr. Kennon Dunham, President of the Association, to Dr. James Alexander Miller, President of the Board of Trustees of Trudeau Sanatorium. The ceremony was made more interesting by greetings from Mrs. Carolyn P. Lindsay, of Albany, N. Y., the oldest living patient to have occupied the cottage. She was under treatment there in 1887.

On the same afternoon the Canadian delegation laid a wreath at the foot of Trudeau's statue on the grounds of the institution. This well known statue, by Gutzon Borglum, pictures Trudeau sitting in his cure chair and gazing off at his beloved mountains.

The meeting opened Monday evening, June 24, in the large auditorium of the High School. The formal program was followed by tableaux dealing with the life of Trudeau presented by pupils of the High School.

The registration totalled 1,365, which was a record breaker for size.

The sessions were well attended, beginning with preliminary meetings of the American Sanatorium Association and the National Conference of Tuberculosis Secretaries on June 24 and ending with a joint symposium of the pathological, clinical, sociological, and administrative sections of the N.T.A., occupying the entire day of June 27. The general title of the symposium was "Present Concepts of Tuberculosis Infection and Disease; their Principles and Application." The morning session dealt with the clinical and pathological considerations. The afternoon session discussed the question of how the present knowledge of tuberculosis may be applied in community programs in the next decade.

Dr. James J. Waring, of Denver, was elected President for 1935–1936. The 1936 meeting will be held in New Orleans, April 22–25.

A full report of the proceedings of the Saranac Lake meeting will be published later in the year in the *Transactions of the National Tuberculosis Association.*

Diseases of the Peasants of Haiti

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AMONG the 2,000,000 country people included in our population, diseases may be found to vary remarkably from one part of the country to another. In addition to clothing, dwelling, and diet conditions, the environment and geographical location, plain or mountain land, constitute a factor exerting considerable influence on the sanitary status of the rural people. As local officials often fail to send reports of deaths to the vital statistics representatives, and in some areas it is not possible to require the presentation of death certificates before burial, the result is that no reliable death statistics are available for the Republic as a whole.

These conclusions are based on the investigations of the Payne Mission of the Rockefeller Foundation (1924–1925), in which the writer participated, in the examination of several thousand emigrants going from Port de Paix to Cuba (1924–1929), in a large number (700) of necropsies we performed in the General Hospital at Port-au-Prince from 1927 to 1929, in our experience in rural dispensaries, especially at Kenscoff (August–September, 1928), at Taifer (January, 1929), and at those opened at Morne La Selle, Marché Lamarque (Nouvelle Tourraine Section, Pétion-Ville District) and at Berly (Port-au-Prince District) (May–September, 1929). Such studies allow us to visualize some of the sanitary problems confronting the Republic of Haiti.

The diet of the Haitian peasants has not improved since the slavery period. As a rule, quantity is preferred by them to quality. While it may be claimed this satisfies their stomach sometimes, one cannot say as much for their bodies. It will not be possible to remedy these defective hygienic conditions until the ignorance of the masses is fully conquered.

While farm work is not the cause of the prevailing industrial diseases, the long hours and the ensuing fatigue, especially in some regions, in women and children, not uncommonly bring about rather serious injuries. Weeding under the summer sun, the preparation of coffee for the market, and the threshing of corn, are hard tasks which almost invariably are accompanied by an acute morbid condition. This condition is characterized by febrile attacks, headache, articular pains, and often an inflammation localized in lumbar muscles, resembling quite closely the clinical picture of sciatica.

Our peasants are also quite liable to traumatic injuries including serious falls. Ploughing machines frequently cause wounds which, on becoming infected, develop into enormous ulcers complicated by tetanus. Children and women often have to carry over poor roads, especially in the mountain regions, huge loads of lumber, water, fruits, building materials, etc. This overwork must end inevitably by damaging their health. The flattening of cranial bones, the exaggerated bending of the spine, the injuries or prolapse

of internal organs, muscular tremors, headaches, cannot fail to produce most harmful effects on the skeletal frame (for instance, on the female pelvis), and must affect the individual's working capacity.

This carrying of heavy weights for long stretches by ill-nourished persons, enjoying only short rest periods, exerts an undue pressure on the posterior portion of the chest. This makes inspiratory dilatation more difficult, increases the tendency to pulmonary and heart infections, decreases blood oxygenation, and paves the way to a resistent chronic anemia.

In women miscarriage becomes rather common as a result of such overwork. Mothers do not remain long enough in bed after parturition, which many times occurs by the roadside. Very often one sees them up and about the day after labor. The puerperium, often very difficult and staged under most disastrous conditions, is in charge of midwives in the neighborhood. These facts explain the defective development of the new-born, their lessened resistance to disease, and the high infant mortality in country districts, which, according to Payne, is 67 per 1,000 in children from 1 to 4 years, and 167 per 1,000 among infants. The same conditions explain the prevalence of abdominal diseases in women.

In a general way, farming and long walks often compel women to stop nursing their babies. A most irrational and often inadequate feeding is then substituted, favoring digestive disturbances, nutritive diseases (Mann and Payne's *edema* disease), and cachexia. These troubles will serve, then, as the starting point for serious dystrophies of a slow but fatal course. The very children of school age are employed at farming tasks and frequently kept at home for the most pressing work of the season.

With the exception of chronic nephritis, the most common diseases among our peasants are of an infectious nature and preventable through social medicine and hygiene.

In our rural districts intestinal infections are common, especially among children, and for the most part take the form of dysenteries or enteritis. These dysenteries may be caused by bacilli (Flexner, Shiga), and in that case belong to the epidemic type, known in Haiti as "colerin," which affects yearly about 25 per cent of our rural population. Another type is caused by the *Endameba hystolitica*, being rather prevalent in the north and affecting more or less, according to the region, from 10 to 20 per cent of our country people. Other organisms with a similar pathogenic rôle are a species of infusoria, the *Balantidium coli*, and intestinal worms.

The enteritis, less serious but just as prevalent, are caused by a species of monilia; by protozoa, *Giardia, Chilomastix, Trichomonas;* and by intestinal worms, such as *Necator americanus, Ascaris*, and *Strongyloides*. Their cause may also be a sudden chilling, poor food, and abuse of alcohol, and in children, ill advised nursing or premature weaning. In this special field there is much work to be performed by medical science endeavoring to teach mothers proper methods of child care.

Children sometimes are apt to eat dirt (geophagism). This habit, derived from the lack of certain dietetic elements, may be said to favor intestinal infestation through the swallowing of eggs or larvae of the worms from the ground. These intestinal parasites are very common and cause many diseases, especially among children. They are also a contributing factor in weakening adults. The most common are ascaris, oxyuris, trichuris, ankylostoma (*Necator americanus*), Strongyloides and taeniae. In 1925, among 4,439 persons examined in the Carrefour, Rivière

Froide, and Dégand districts, we found: in 30 per cent, ankylostomas; in 43 per cent, ascaris; and 58, trichuris.

Hookworm disease is common in the sugar cane, coffee, and other plantations. The proportion of infested persons in the mass of Haitian people examined so far is 26 per cent. The prevalence and seriousness of the infestation vary a great deal in the different places. The Cul-de-Sac plain is free from the disease because the larvae of the *Necator americanus* do not develop in salty ground, but all our mountain districts are infested. This condition has been well known in Haiti since the colonial period under the name of "stomach trouble." The persons most in danger of contracting it are those in direct contact with the hot and damp larvae-infested ground, such as cane, banana, cocoa, coffee, tobacco, and rice plantations. Levacher, in his "Guide Médical des Antilles" published in 1847, states that "its appearance may be due to the clearing of virgin lands, to the opening of ditches . . . and to a watery and vegetable feeding." The slaves became infested by dirt eating, and killed themselves by the slow torture of hookworm disease. "I have seen negroes," Levacher states, "to poison themselves in this way, compelling their children to follow their example, purely to revenge themselves and with the sole purpose of hurting their owners' interests by getting out of condition."

Since that time the significance of hookworm disease has remained ignored in Haiti, and only after the first efforts made by the Rockefeller Mission (1924) to penetrate our country districts, and the opening of the first country dispensaries, was it that the Public Health Service began its campaign against one of the causes undermining our national energy. In order that this campaign might secure its best results it should be completed with a series of sanitary measures. It is not enough to advise wearing of shoes, since the larvae scattered on the ground by fecal matter may occasionally infect even well-shod people. The menace involved in hookworm disease will decrease only when general conditions are improved and preventive medicine makes further progress.

New growths of all kinds are common in Haiti. Uterine fibroids reach sometimes considerable size. Lipomas and keloids are not uncommon. Cancer is just as prevalent as non-malignant growths but seldom diagnosed. Malignant tumors cause an approximate death rate of 5 per cent in the hospitals of the country. From a study by R. M. Choisser, it may be seen that among 700 necropsies he found 27 malignant cases, that is, 3.8 per cent (3 sarcomas and 24 carcinomas). In a series of 486 biopsies from different groups, 75 (15.4 per cent) were malignant growths, namely: 32 adenocarcinomas, 24 squamous cell carcinomas, 5 basal cell carcinomas, 3 pigmented melanomas, 3 non-pigmented melanomas, 2 lymphoblastomas, and 6 fibrosarcomas. This shows that cancer is just as prevalent as in other countries, even in the temperate zone.

Goiter is common in our mountain districts. Pellagra is occasionally found but it is not very prevalent. Granular conjunctivitis affected, according to Dr. James Hooker, 16 per cent of the children examined during the investigation carried out by the Rockefeller Foundation. Chickenpox, influenza, and cerebrospinal meningitis caused, in 1929, many deaths throughout the republic, but especially in the north.

A condition rather common in the Cul-de-Sac plain, in the Despuiseau region, is gusarola (pinta, carate), characterized by patches assuming different colors. As it also happens with other dermatomycoses, lack of cleanliness contributes to its development.

The course of the disease is very slow. Uncovered parts of the body are the first to be attacked. The white and violet varieties are those most prevalent. Several varieties may be seen in the same individual, and the patient's appearance in such cases is very peculiar and most striking. The infection is accompanied by a very annoying itching. Its etiology has not been definitely determined. While some writers believe the pathogenic agent is a fungus, this of late has been question (cf. *Bol. Of. San. Pan.*, May, 1934, p. 458).

Tuberculosis is rather common in our country districts. While not strictly a tropical disease, it progresses very rapidly in our country, recalling the childhood type tuberculosis of the temperate zone. The spread of this disease in our rural districts may be explained by the absence of a specific immunity in the people, which makes them more sensitive to the infection. Promiscuousness is another factor playing an important rôle in the tuberculization of the people. In the hospitals of Haiti tuberculosis is the most important cause of death, *amounting to 30 per cent of the total number of deaths!*

If we recall that a sample of milk from the Taifer section (Port-au-Prince district) contained 1,600,000 bacteria per c.c., when at the most there should have been only 10,000, and none of them of a pathogenic type; that watering the milk is an everyday affair in our rural districts; that even spring water is at times polluted by all sorts of excreta; it is easy to understand why typhoid fever claims numerous victims, especially in the colder regions, in spite of the immunity derived from repeated mild infections. This disease often exhibits an atypical course and is generally complicated by malaria. Paratyphoid fevers are also quite common.

Malaria has been known in Haiti since the discovery of the island. Robertson and Abbé Raynal have left us interesting descriptions. Columbus, during his second trip, contracted a violent fever which left him in a comatose condition (a typical manifestation of malignant tertian due to *Plasmodium falciparum*). This is what French physicians of the colonial era called intermittent cerebral pernicious fever. Tertian and double tertian fevers, even now called acclimatization fevers, were very common during the colonial period.

Among 4,439 persons examined in different places during the surveys of the Rockefeller Mission, 67 per cent showed malarial parasites in the blood. Wilson and Clark, while examining at Port de Paix 11,000 emigrants coming from different districts in the north and northeast on their way to Cuba to work for the United Fruit Company, found that 23.5 per cent had malaria. In Haiti two species of anopheles have been identified as malarial carriers: albimanus and grabhamii.

Filariasis is found mostly in the Cul-de-Sac plain and in the Quartier-Morin region. As is the case with all parasitic diseases, it may be present in apparently well people without exciting any complaint. As a rule, however, it produces repeatedly more or less serious lymphatic disturbances and many times it is the cause of elephantiasis. The filarial vector in Haiti is the *Culex quinquefasciatus*.

A disease which has become a menace among us is leprosy. This condition seems all the more serious since, in spite of the marked improvement secured almost universally through modern therapeutics, there is no leprosarium in Haiti and many cases remain untreated, and at large.

The most common disease in our country districts is yaws. Among 2,564 persons examined in different districts in the neighborhood of Port-au-Prince the Rockefeller Mission found 78 per

cent affected with yaws. The disease is common among the young. Among 3,289 cases examined by Dr. Wilson, Dr. Mathis, and the writer while the traveling clinic stayed at Nouvelle Touraine, Marché Lamarque and Berly in 1929, 61.1 per cent were children under 10. The disease made its appearance in Haiti with the introduction of the first African slaves in 1509 (cf. Sydenham: "Opera Medica," Vol. 2, p. 33, 1850 edition, and Levacher, *supra*, p. 280), but it is only since 1922 that a rational and intensive treatment has been introduced in our rural districts. The first description of this disease is accurately given by Oviedo y Valdés in 1526 in his "Historia general y natural de las Indias," where he calls it a terrible pustular disease. About 235 years ago, Father Labat wrote in his "Travels to the Islands of America": "The Caribs are very sensitive to yaws. This disease is proper of America and natural there. All those born there, of either sex, are attacked, perhaps since they come into this world, even when their parents are quite healthy or anyhow they seem to be so."

The Haitian Government has already spent enormous amounts in combating this disease. Public education and intensive treatment in some districts have been successful in reducing the number of patients. In the Jacmel region alone, from May, 1925, to April, 1926, 167,267 cases of yaws were treated. In 1926, over 200,000 injections of arsenicals against the disease were given throughout the Republic. During the fiscal year 1928–1929, 190,000 injections were given, and from 1918 to 1931 the injections given by the Public Health Service make a total of 2,655,386. At present the campaign against yaws continues in the rural dispensaries with the routine use of stovarsol or spirocid in tablet form. These drugs were put in use when the traveling clinics were opened in May, 1929, substituting the other arsenical preparations and bismuth. From 1929 to 1930 over 300,000 tablets were given.

The wonderful central plain, known by Moreau de Saint-Méry under the name of Guaba plain, represents approximately one-tenth of the total surface of the Republic of Haiti. While fruitful and well irrigated, its population sees its earning capacity curtailed by the morbid triad of malaria, hookworm disease, and yaws. The importance, from a sanitary standpoint, of the new hospital at Hinche in this region may be understood when one remembers that this central plain must become some day the granary of the Republic.

The Public Health Service, organized in 1919, has come to remedy a sad condition and has not stopped for one day in offering to the peasants, in the shape of object-lessons and demonstrations, practical hygienic information, at every place where a permanent group of people, as a market or a chapel, may be found. It has also organized dispensaries throughout the Republic to extend its beneficial influence. However, there is still much to be done.

The Public Health Service is carrying out slowly and methodically, a hard civilizing task, the medical education of the masses, thereby leading them further and further from the old empirical beliefs.

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Fireworks Study

A NATION-WIDE study of the nature, causes, and results of fireworks accidents was inaugurated July 5 by the American Museum of Safety with the coöperation of public health authorities and safety organizations throughout the country.

The study will seek to ascertain how serious a hazard to life, limb, and sight fireworks are, which particular items of fireworks are involved in most accidents, what influence, if any, prohibitory legislation has on the frequency of fireworks accidents, and the sources of the fireworks causing accidents. The study will be under the direction of Dr. Leland E. Cofer, former Director of Industrial Hygiene for the State of New York, and former Assistant Surgeon General of the U. S. Public Health Service. Dr. Cofer will be assisted by representatives of national agencies all of whom have had acquaintance with the problem of fireworks accidents and who now constitute the Fireworks Accident Prevention Committee of the American Museum of Safety.

The leading fireworks manufacturers, through Pyrotechnic Industries, Inc., have not only made an unconditional grant to the Museum of Safety which will make possible a wholly objective study, but have agreed in advance to take steps for the elimination of those elements in fireworks manufacture which are shown to be responsible for serious hazards to life and limb.

Sewage Contaminated Irrigation Water

A Major Public Health Program in the West*

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ONE of the marks of civilization is the proper disposal of human excreta. It is human excreta which carry the germs of infectious intestinal diseases, which we may well call the filth diseases because they are transmitted through human filth. They include typhoid fever, amebic and bacillary dysentery, and so-called "infectious diarrhea." Where they are present one will find conditions permitting the contamination of water, milk or other food with urine and intestinal contents. Where this contamination does not occur this group of diseases does not have to be seriously reckoned with.

What is sewage? I am amazed to find how many people think of it in terms of dishwater and storm sewers. In reality sewage contains: urine, sputum, feces, disintegrated toilet paper, disintegrated sanitary pads, and contraceptive devices. Look at your sewer outlets if you live in a town not equipped with a treatment system and convince yourself of these facts.

When sewage comes in direct contact with food or domestic water we have epidemics of intestinal disease. Chicago has furnished us with two graphic illustrations of this within the recent past. A group of experts commissioned to investigate the recent amebic dysentery epidemic there reported [1] that it was not caused by food handlers, as was suspected at first, but rather from the bursting of sewage pipes in the cellar of one of the leading hotels. The contents flooded the kitchen, food and refrigeration compartments of this hotel. Plumbing cross-connections, which never should have been permitted by health authorities, carried the ameba to a neighboring hotel. Even this short exposure to germ laden sewage was enough to start an epidemic the last of which has not been heard.

The second instance was during the stockyards fire in May, 1934. Sewage contaminated water was used for fighting the fire and for drinking purposes by some of the firemen and spectators. There followed among these, 69 cases of typhoid fever, 2 of paratyphoid, and many of acute diarrhea. Laboratory studies revealed that a high percentage had become infected with *Endameba histolytica*.[2]

Can danger to the public health result from pouring untreated sewage into streams used for irrigation? and, if there is danger in this procedure, how much does it amount to? The answer is an important one particularly to the inhabitants of our arid western states where irrigation is essential to the raising of all market produce.

Lest, in the light of present knowledge, in posing this question, I seem to set up a straw man merely to knock him down, let me state that many of

* Presented at the General Session of the Annual Meeting of the Arizona Public Health Association, Phoenix, Ariz., April 23, 1935.

our cities and towns in the West dump their sewage untreated into nearby streams— streams used in many instances almost immediately to irrigate market produce. In less populated districts, where sewerage systems are infrequent, privies will be found located directly over irrigation ditches in order that the output may be carried away easily to some neighbor's field. Man, like his mother, Nature, acts generally along lines of least resistance. These methods of disposal have aroused only rare objections and then, as a rule, from some farmer who has found the odor more than he can bear. Farmers as a class have made no complaint for they have wanted the water content of the sewage added to their scanty sources of supply and also, frequently, they receive a continuous source of fertilizer—human excreta—without cost. They have failed to realize that the buffalo gnats, which pester and sometimes kill their cattle, breed in quantities as a direct result of stream pollution. A leading newspaper with a large circulation in the West, located in one of our large cities the sewage of which is disposed of under these conditions, recently told its readers in glaring headlines that a sewage disposal plant was a waste of money and editorially advised its readers to vote against any such unnecessary expenditure. This problem then is not one made of straw, but is very real and vital.

Our methods of pouring untreated sewage into small streams and rivers carry the germs of disease and often the solid constituents of sewage into irrigation ditches to deposit them on the hands of the workers, on the soil of the fields, and on the vegetables growing in these fields. Examine some of these ditches and fields, especially those below our larger cities not equipped with adequate disposal plants. The sight is nauseating. That the grossest kind of pollution is possible under this system is shown by the fact that lettuce has been served in public eating places with feces adhering to the leaves.

Analysis of vegetables raised with sewage contaminated irrigation water has been made in the bacteriological laboratory of the Colorado State Board of Health.[3] Even vegetables which are grown many miles below the source of pollution were found to reek with colon bacilli, and after thorough washing the colon bacillus index in many instances was too high to pass them as fit for human consumption. Mills, Bartlett, and Kessel [4] have shown that pathogenic bacteria may persist on the surface of fruits and vegetables kept under moist conditions for 15 days or more. If these bacteria gain entrance through injured or decayed portions they may remain alive 7 to 42 days. These are the vegetables that come into our markets, are handled by our housewives, and eaten by our people.

Is it possible that I am unduly exercised over the unesthetic side of this picture? Even though the chance for infection exists, may we not be fortunate enough to escape infection? Is there any real evidence to show that, after all, people living in regions where these methods of disposal are the rule have more than their share of the filth diseases?

Colorado offers an excellent laboratory for study because this is a state in which there is extensive irrigation, some of it done with water grossly contaminated by sewage and some of it with water which is relatively clean. Let us look at the death rates from some of the intestinal diseases for this state and compare them with those of the United States, the neighboring states, and California, which has a larger percentage of Mexicans and foreign born than Colorado. These figures are based on the latest statistics of the U. S. Public Health Service, and cover as long a period as is on record for

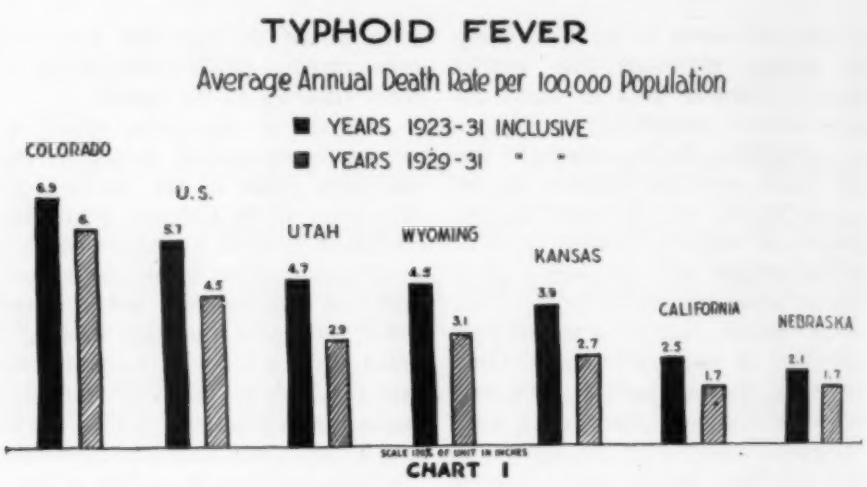


CHART 1

this group of states as a whole. California is included because this state also has extensive areas under irrigation; but the use of contaminated water for the raising of market produce is not permitted.[5] Nebraska and Wyoming have no counties where sewage contaminated water is used.[6] Utah and Kansas each have 1 county using contaminated water for irrigation.[7] I was unable to get comparable data for Arizona and New Mexico which have been in the U. S. Registration Area too short a time. Such figures as I was able to obtain would make one suspect that they are faced to even a greater extent with the same problem that exists in Colorado.

Charts I and II illustrate these comparisons. The death rates from diarrhea are especially high among babies and young children. Infants are most susceptible to contaminated food and this death rate is always a very delicate indicator of contamination. Not only are our death rates high in Colorado, when compared with those of the United States, our neighbors,

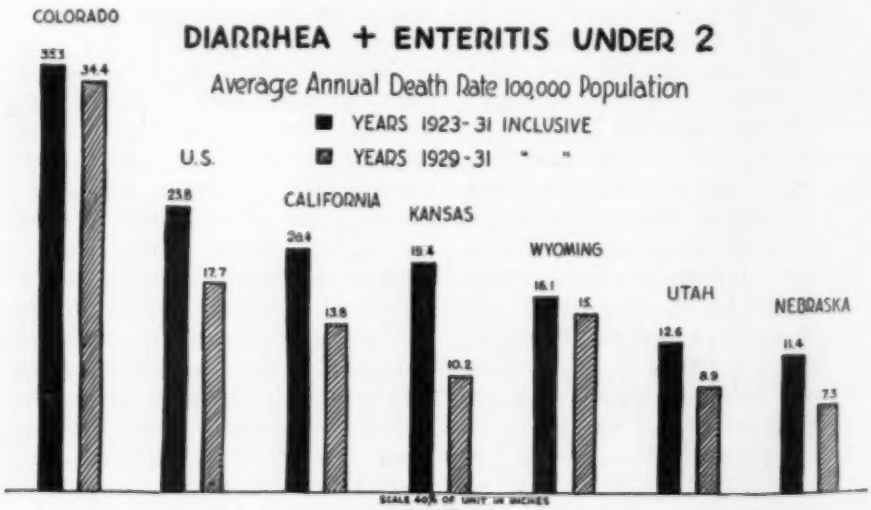


CHART 2

and California, but we have failed to show the percentage decline which they have shown in recent years.

Something is evidently wrong. It is not the general level of the intelligence of the population. Colorado, in a study [8] based on 7 different tests, was rated among the first 10 states in this country in the matter of intelligence of its people. It has not as large a percentage of Mexican or foreign born population as has California, yet California has a much lower death rate from these filth diseases.

Fortunately for the purpose of our analysis, though not for economical administration, Colorado is divided into 63 small counties. Using figures for the total number of deaths from typhoid fever and from "diarrhea and enteritis under age 2," I have calculated the death rates for each of the counties and averaged them for the 3 year period 1929–1931, the latest that can be compared with the group of states already illustrated. These figures appear on Maps I and II. Counties are black which had an average death rate for this period higher than the average for the United States. Black dots mark the location of the principal towns and cities in the state which pour their sewage untreated into streams, the water from which is used for irrigation. Without knowledge of my results, B. V. Howe, Colorado State Sanitary Engineer, indicated the streams in the state which he regarded as grossly contaminated with sewage and these I have included.

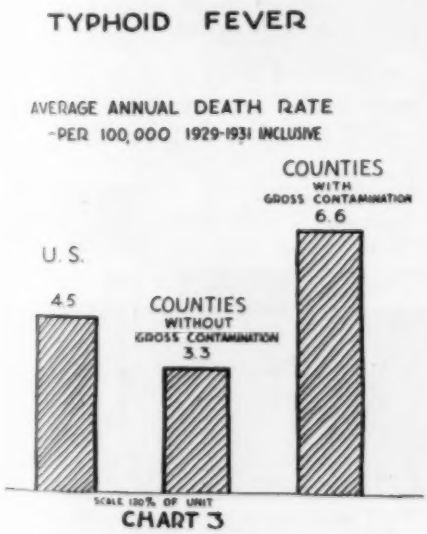


CHART 3

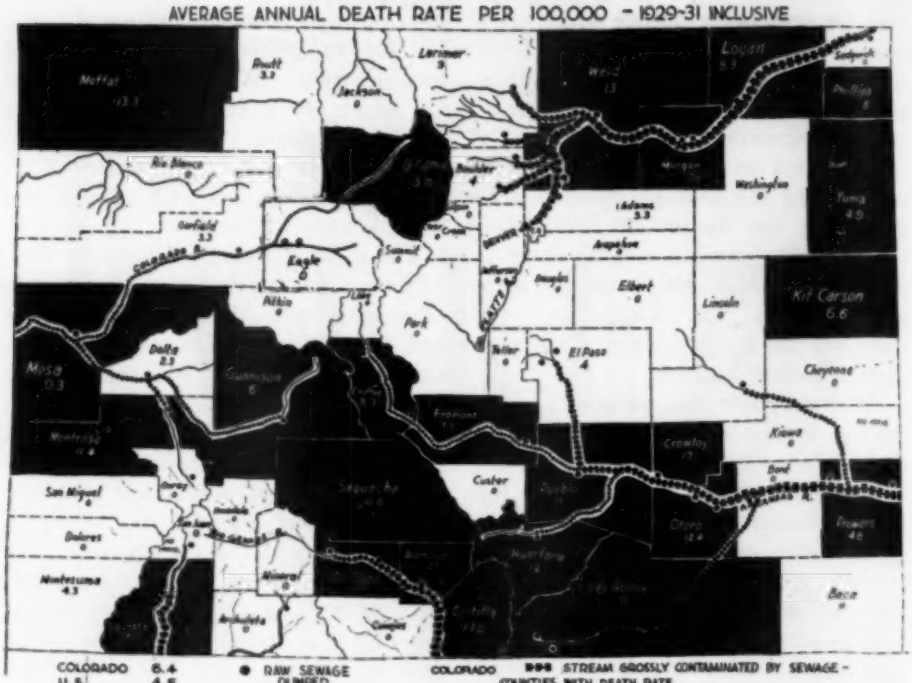
The maps graphically illustrate that, with very few exceptions, the high death rates from typhoid fever and diarrhea and enteritis under 2—some of them almost 10 times the average for the United States as a whole—occur in counties where irrigation water is grossly contaminated by sewage. Counties, whose irrigation water is relatively clean or where there is no irrigation, have, with very few exceptions, low death rates. Many of them have had no deaths from these diseases during the 3 year period. Deaths from dysentery and from "diarrhea and enteritis over age 2," in general follow this same distribution.*

Not only are death rates from the filth diseases high in most of these counties where raw sewage is mixed with irrigation water, but also every summer and fall, about the time most of the local grown vegetables come upon the market in all of these areas for which we have data, there is an epidemic of diarrhea. These epidemics used to be frequent in eastern cities. Correspondence with boards of health of some of these cities reveals the fact that they are now largely unpleasant memories of the past, thanks to improved methods of sanitation.

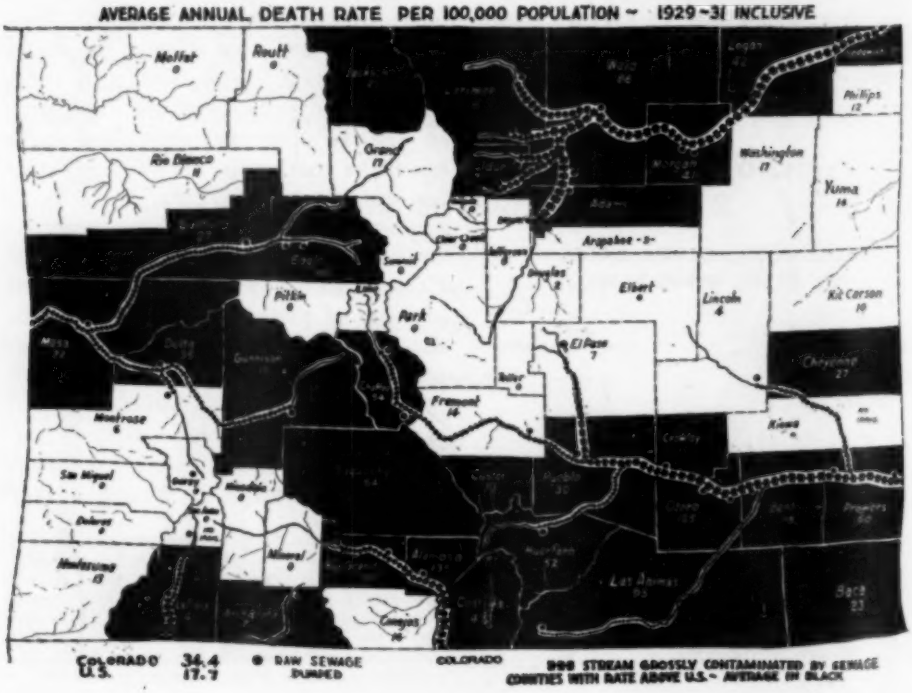
Granted that these diseases are problems only where sewage is spread over the landscape as we do through

* Saguache County, which gives the appearance of being an exception to the rule, has much irrigation. The water table is unique in this county as it is only 2–3 feet below the surface of the ground. This permits contamination of domestic water supplies from privies—the common method of disposal in this county. Privies are also located directly over irrigation ditches in some instances.

MAP I—TYPHOID FEVER
AVERAGE ANNUAL DEATH RATE PER 100,000 - 1929-31 INCLUSIVE



MAP II—DIARRHEA + ENTERITIS UNDER 2 YEARS
AVERAGE ANNUAL DEATH RATE PER 100,000 POPULATION - 1929-31 INCLUSIVE



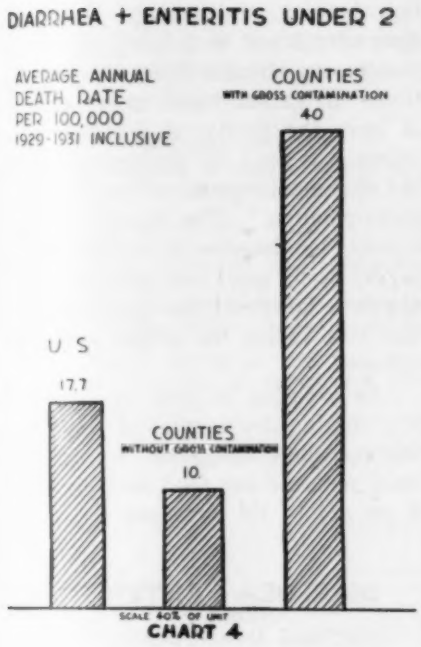


CHART 4

the medium of irrigation water, still can we be sure that we have found the cause of our trouble? Cannot a poor domestic water supply furnish the explanation for this unfortunate condition? A recent survey [9] of the domestic water supplies in Colorado by the U. S. Public Health Service gives the state a reasonably good bill of health. In general the supplies of the large cities are well protected, yet most of these large cities with good water supplies have a high incidence of intestinal disease. Hence domestic water transmission is not the answer.

What about milk? This same report of the U. S. Public Health Service showed that there is only a 64 per cent compliance by milk producers as a class with regulations recognized as necessary for the marketing of wholesome milk. Dairies are poorly screened. Pasteurization is often improperly performed. This situation, however, is, with a few notable exceptions, a uniform condition throughout the state, and if it alone furnishes the explanation for our high death rates, we should expect that most of our county rates would be high. This is not what we find, as the maps indicate. Poorly safeguarded milk in the sewage contaminated counties can be particularly dangerous. Cows frequently wade in polluted water, contaminating their udders and thus the milk. Occasionally farmers use irrigation water for washing utensils. Flies can breed in deposits in irrigation ditches and then fly into unscreened dairies to transmit intestinal bacteria to milk.

What foods raised with sewage contaminated water should be avoided? Fruits, such as strawberries, which grow close to the ground; vegetables eaten raw, such as lettuce, cabbage, celery, green onions, carrots, radishes, and parsley. We have seen already that thorough washing cannot be depended upon to make them fit to eat. Cooking will destroy intestinal disease producing bacteria, but the handling by the housewife of the vegetables preparatory to cooking, or their presence in the refrigerator, may furnish an opportunity to transmit these bacteria to other foods. This is especially dangerous when articles of food intended for infant consumption are contaminated. It is as though the head of cabbage,

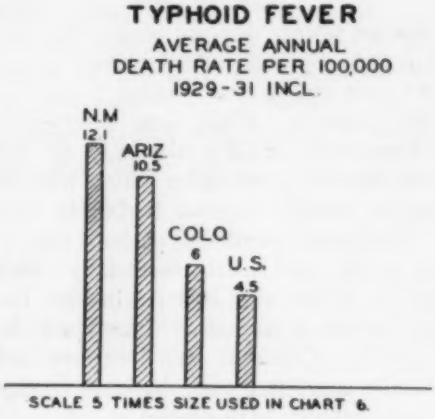


CHART 5

for instance, were covered with black sticky tar. It cannot be handled without transferring the tar to the hands and to everything later touched, which may include the baby's mouth, his toys, or his food.

All this sounds almost unbelievable in a civilized community, yet it does exist, not only in Colorado, but in other states in the arid region of our South and West where irrigation is necessary. It is the sort of thing that one finds in a more aggravated form in China, where intestinal disease is rampant and American tourists are warned to avoid all green vegetables. In certain European countries human fertilizer is used on gardens, but only after proper curing, thus killing disease producing organisms. Ordinary animal fertilizers do not carry the germs of human intestinal disease.

This condition among us has persisted because the majority of thinking people, the sort of people who are sensitive to matters of hygiene, have not realized that it existed. I am convinced that all that is necessary to end this repellent situation is to inform the people of the facts. This is being done in Colorado under the active leadership of the Committee on Public Health of the Colorado State Medical Society and the Colorado State Board of Health. Boulder has just completed a sewage disposal plant. Denver, Colorado Springs, and Greeley, within the past month, have voted bonds for this purpose. With these progressive communities leading the way it will not take long for other cities without proper sewage disposal to fall in line.

The government has shown that it is ready to assist financially with grants under the P.W.A. in the improvement of sanitation throughout the country. Cities in many eastern and Pacific coast states are building sewage treatment plants to protect streams and rivers which are used only for navigation, bathing, and fishing. How much more important it is that we should protect our streams from sewage pollution. Irrigation water does not need to have the purity of domestic water unless it is used for domestic purposes, but it must be protected against gross contamination. The California regulations, too lengthy to discuss in this paper, seem sane and practical. Remember, however, that regulations are worthless unless the people want them enforced.

The solution is one of education. We, in this dry section of the United States, where irrigation is necessary, must separate our food from our feces, if we are to rid ourselves of our high

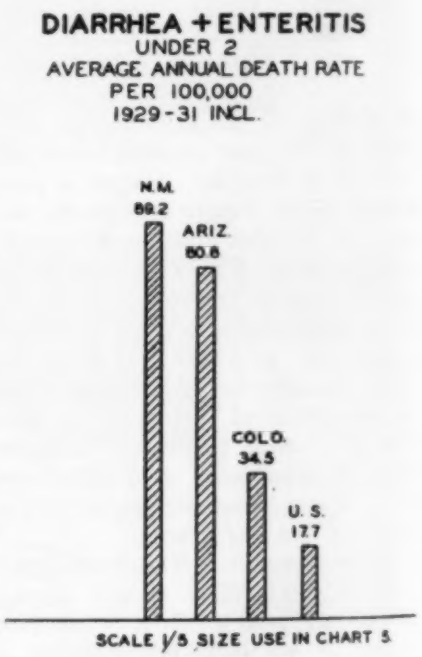


CHART 6

incidence of the filth diseases. It is the duty of all who are leaders in public health in the West to investigate this problem as it applies to their own states, and then to carry to the people the facts. Our people, once informed,

can be depended upon to take the steps necessary to end this dangerous and revolting condition.

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ACKNOWLEDGMENTS—The author is indebted to Drs. C. H. Boissevain and C. T. Ryder, of Colorado Springs, for checking his bacteriological data; to Alfred Cowles, III, and W. F. C. Nelson, of Colorado Springs for assistance with regard to statistics presented, and to Dr. H. M. Bracken, Claremont, Calif., for helpful criticism.

Aerial Navigation

ON June 5, 1935, the United States Senate ratified, with two reservations, the International Sanitary Convention for Aerial Navigation, which was opened for signature at The Hague, on April 12, 1933, and signed on behalf of the United States on April 6, 1934.

Two reservations were made: 1. Exempting the United States from liability to amendments unless they were first accepted by the government; 2. reserving the right to decide as to whether or not a foreign district is infected and also what requirements shall be applied.

"The ratification will have to be deposited with the Government of the Netherlands before the convention is proclaimed by the President. The convention provides that as soon as 10 ratifications have been deposited, the Government of the Netherlands will draw up a procesverbal and transmit copies to the Governments of the high contracting parties and to the Office International d'hygiene publique, and the convention shall come into force on the 120th day after the date of the procesverbal. Ten ratifications have already been deposited with the Netherlands Government, and the convention will come into effect on August 1, 1935." —*Pub. Health Rep.*, June 28, 1935, pp. 863–864.

Outbreak of Food Poisoning, Probably Due to Staphylococcus Aureus

A. CORPENING AND ELSIE P. FOXHALL
Bureau of Laboratories, State Department of Health, Richmond, Va.

TWELVE people were involved in a food poisoning outbreak following a dinner at which cake with custard filling was served. A local physician made a study of conditions and found that only the people who ate the cake became ill. The State Epidemiologist inspected the kitchen where the dinner was prepared and found it clean and sanitary. The pantries and refrigerators were also remarkably clean. The cooks and helpers were well and gave no history of having been ill during the previous month.

Two cakes with a custard filling were made Friday morning, September 7, one of which was served for luncheon on Friday, but no one became ill following this luncheon. The other cake was placed in the refrigerator that afternoon. Saturday morning it was taken out of the refrigerator and left at room temperature until it was served that night, September 8, for dinner.

The people who ate the cake that evening became ill within 3 or 4 hours after eating. Nausea, vomiting, griping abdominal pain, diarrhea, and prostration were the outstanding symptoms. One patient had, in addition, some disturbance of vision and violent cramps in his leg muscles. It was necessary to administer morphine to quiet him. The illness persisted in some cases 3 or 4 days. No deaths occurred.

A portion of the cake and custard filling was sent to the laboratory 3 days after it was made. Since the cake also contained the custard filling, we will refer only to the cake. A direct microscopical examination showed the presence of staphylococci and large Gram-positive spore forming bacilli. Some of the cake was emulsified in sterile saline and inoculated on dextrose agar and eosin methylene blue agar plates; also in 1 per cent dextrose broth, veal infusion and beef infusion broth.

Animal experiments were made with portions of the cake. No ill effects were produced in rabbits or guinea pigs following the intraperitoneal injection and feeding of portions of this cake.

The bacteriological examination of the cake showed 4 types of organisms: *Bacillus subtilis, Streptococcus fecalis, Staphylococcus aureus* and a Gram-negative bacillus belonging to the Eberthella group and corresponding to *Eberthella enterica* (Bergey's classification). Three of these organisms, *Streptococcus fecalis, Staphylococcus aureus* and *Eberthella enterica* were tested for toxin production. *Bacillus subtilis* was not included, as we know of no instance in which *Bacillus subtilis* has produced food poisoning. For toxin determination a medium similar to the custard filling was prepared and divided into three 2 oz. portions. One portion was inoculated with 1 c.c. of a broth culture of the *Staphylococcus aureus,* another portion with 1 c.c. of a broth culture of the *Streptococcus fecalis* and the

third portion with 1 c.c. of a broth culture of the *Eberthella enterica*. The portions were fed to cats after 48 hours of incubation at 37° C. Each cat consumed approximately 1½ oz. of custard. There were no noticeable effects. Three 1 oz. portions of minced beef, to which was added 1 c.c. of a 48 hour broth culture of each organism, were fed to cats. There was no evidence of illness. A 24 hour culture of the organisms inoculated into beef infusion broth was fed to cats. The cat fed the *Eberthella enterica* culture did not show any evidence of illness; the one fed the *Streptococcus fecalis* developed diarrhea within 5 hours; the one fed *Staphylococcus aureus* appeared to be nauseated within 6 hours, but did not vomit. The cats were kept under observation 4 days,—all remained alive and were well at the end of this time.

Further studies for determining the toxin production of the organisms were conducted with rabbits and mice. Forty-eight hour bacterial-free broth filtrates of each organism were inoculated intraperitoneally into mice, but caused no evidence of illness. A rabbit inoculated intravenously with 1.5 c.c. of a 48 hour bacterial-free broth filtrate of *Eberthella enterica* died 1¼ hours later. A second rabbit inoculated intravenously with 1.5 c.c. of a bacterial-free filtrate of a 48 hour broth culture of *Eberthella enterica* developed a slight diarrhea within 1 hour. Two rabbits inoculated intravenously with 1.5 c.c. of a bacterial-free filtrate of a 48 hour broth culture of *Streptococcus fecalis* and *Staphylococcus aureus* did not show any evidence of illness. One and five-tenths c.c. of a bacterial-free filtrate of a 96 hour broth culture of *Staphylococcus aureus* and *Eberthella enterica* injected intravenously into rabbits failed to produce illness. Two c.c. of a bacterial-free filtrate of the 3 organisms grown in custard for 48 hours and inoculated intravenously into rabbits did not produce any symptoms of illness.

Further experiments were conducted with human volunteers. The results are shown in Chart I.

Blood was received from one person who had been made sick by eating the cake. A culture made from this blood showed *Staphylococcus aureus*. The culture was made from a clot and there is a question as to the etiological significance of the presence of *Staphylococcus aureus*, since a large number of blood cultures sent to the laboratory show the presence of this organism. The organism isolated from the blood did not agglutinate the patient's serum.

Specimens of feces were received from 5 persons who became ill after eating the cake. *Staphylococcus aureus*, *Streptococcus fecalis* and *Proteus vulgaris* were isolated. The incidence of these organisms in the specimens was no more than would be expected from any fecal specimens.

The Staphylococcus isolated from the

CHART I

RESULTS OF INGESTION OF BACTERIAL-FREE FILTRATES BY HUMAN VOLUNTEERS

Human Volunteer	*Type Filtrate*	*Organism*	*Amount*	*Results*
A	48 hr. broth	*Eberthella enterica*	5 c.c.	No ill effects
B	48 hr. broth	*Staphylococcus aureus*	5 c.c.	No ill effects
C	96 hr. broth	*Eberthella enterica*	20 c.c.	No ill effects
D	96 hr. broth	*Staphylococcus aureus*	20 c.c.	Nausea, vomiting, diarrhea
E	96 hr. broth	*Streptococcus fecalis*	20 c.c.	No ill effects
F	48 hr. custard	*Eberthella enterica*	6 c.c.	No ill effects
G	48 hr. custard	*Staphylococcus aureus*	7 c.c.	Nausea, diarrhea

Control tests were made with normal filtrates in each instance.

food produced a yellow pigment. The morphology was that of a typical coccus, occurring singly, in pairs, and in clumps. Dextrose, lactose, maltose, mannite, and sucrose produced acid but no gas. Salicin and inulin were not affected. Gelatin was not liquefied. Litmus milk was rendered acid, but coagulation did not occur. A 96 hour beef infusion broth culture heated to 100° C. for 15 minutes, only partially destroyed the toxic substance. A human volunteer swallowed 20 c.c. of a bacterial-free filtrate of a broth culture exposed to heat at 100° C. for 15 minutes, and while the reaction was not violent there was a slight indication of nausea and soreness of the abdomen, with occasional griping pains. This was the same person as volunteer " D " who had previously ingested 20 c.c. of a bacterial-free broth filtrate that had not been exposed to heat.

As the symptoms developed within 3 to 4 hours after ingestion of the cake it seems probable that a formed toxic substance was the active agent. The *Staphylococcus aureus* isolated from the cake apparently produced a toxic substance in broth and in custard media as shown by the effect of the sterile filtrates, which, when swallowed by human volunteers, gave rise to symptoms resembling those of the persons made ill after eating the cake.

SUMMARY

1. Food poisoning due to cake with custard filling caused the illness of 12 persons.

2. This illness was acute gastroenteritis with nausea, vomiting, diarrhea and prostration. In the more acute cases there were severe muscular spasms. No deaths occurred.

3. Microscopic examinations of the food showed *Staphylococcus aureus* to be the predominating organism.

4. Specimens of the cake were fed to rabbits, guinea pigs, mice, and cats. There were no severe illnesses.

5. Bacteriological examination of the cake revealed 4 types of organisms: *Staphylococcus aureus, Streptococcus fecalis, Eberthella enterica* and *Bacillus subtilis.*

6. Human volunteers developed symptoms of food poisoning after drinking the *Staphylococcus aureus* filtrates. Filtrates from the *Eberthella enterica* and *Streptococcus fecalis* did not prove to be toxic when swallowed by human volunteers.

Development of Adult Type Pulmonary Tuberculosis Following the Recognition of a Childhood Form

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HOW frequently will an individual with a childhood type tuberculosis progress to an adult pulmonary form? This question is of considerable importance in tuberculosis administrative practice. If this progression occurs in over 2 per cent of cases, is it logical to provide the necessary facilities for adequate supervision? If such supervision is deemed necessary, then it is logical that we should make every effort to discover all cases of childhood type tuberculosis for further observation. The facilities necessary to establish and maintain the above indicated services are costly, and before adopting them we should know the approximate return to be expected from the dollar invested.

Available data in the literature on this problem is limited and not fully comparable. In New Haven, we have observed 155 children originally classified as childhood type tuberculosis—9, or 5.8 per cent of whom later developed an adult pulmonary form. We present our material with the hope that similar data may be forthcoming from other workers to assist in determining the relative importance of this control procedure with the many others more or less well established.

It has been shown by Opie [1] that on autopsy, every case of adult form pulmonary tuberculosis has an associated primary lesion. Also, it is assumed that the presence of a childhood type lesion represents much more than casual infection. Thus, the inference adduced is that every case with evidence of a childhood type lesion is a potential case of adult form.

Pope [2] in reporting on 5,000 children followed in the Chadwick clinics, states:

> During the period of observation, 30 new cases of pulmonary tuberculosis developed. . . . In this group the average age at which pulmonary tuberculosis was diagnosed was 15.4 years, and the mean interval from the original examination to the development of pulmonary lesions was 4 years. The proportion of cases in which pulmonary tuberculosis developed was twice as high among children with childhood type lesions as in the suspect group, 0.93 compared with 0.46 per cent. . . . Of the whole observation group during a mean period of about 3½ years, pulmonary tuberculosis developed in 0.6 per cent while the mean incidence of pulmonary disease in the total school population has been 0.1 per cent.

Hall and Chang [3] reporting on 1,007 Chinese of the professional class, indicate that in 308 cases, there were changes in diagnosis over a period of supervision. Of 144 originally classified as tracheobronchial tuberculous lymphadenitis, 6, or 4.1 per cent, developed manifest pulmonary tuberculosis in an average of 54.5 months.

Korns [5] reports that, in a group of 100 positive tuberculin children show-

ing X-ray evidence of childhood type, 2 later developed an adult type, or 2 per cent. One of these cases had remained in the home with his father who had had a positive sputum for years. The second had had a heavy childhood exposure in the home 7 years previously, but none since that time.

Rathburn [5] states:

> This type (childhood tuberculosis) is found in only between 3 and 4 per cent of the total school population of our county, which means that 50 per cent of the cases of pulmonary tuberculosis developing during the 'teens, is confined to this small group.

Stewart [6] reports that 84 out of 10,000 children examined at Lymanhurst, 0.08 per cent had pulmonary tuberculosis. Thirty-six of the 84, 43 per cent or 0.04 per cent of the 10,000, were observed to have progressed from a childhood type to adult form. He concludes that primary tuberculosis infections do not prevent consumption from developing at some later date, and in fact predispose to consumption if successfully reinfected from exogenous or endogenous sources.

In New Haven, there have been two reports indicating the progression from a childhood type to a pulmonary form. Boles [7] tabulated data on 127 cases previously diagnosed as childhood type in the files of the New Haven dispensary, over the period 1916 to 1929. The ages on admission were 1 to 15 years, and at the close of the period of observation, 6 to 28 years, in 1931. Fourteen, or 11 per cent, developed an adult pulmonary lesion. Contact history was definite in 11, questionable in 2, and negative in 1. Edwards [8] in a partial analysis of tuberculosis dispensary practice among New Haven residents in 1931, revealed 105 changes in diagnosis among 2,693 examined. There were 3 originally diagnosed as childhood type who later developed a pulmonary lesion, or 0.9 per cent.

The tuberculosis program in New Haven is based on the family unit. For purposes of continued study and analysis, every case of diagnosed tuberculosis (all forms) is carried in our files until he dies, moves away, or is lost. For similar purposes of study, we endeavor to carry every tuberculin positive child, and every childhood type disease discovered in the clinic. until the individual attains the age of 25 years.

A review has been made of the current tuberculosis family roster in New Haven, March, 1934, to determine the number of instances in which there was a progression from childhood types to an adult type. We located 155 individuals with a primary diagnosis of childhood type tuberculosis, which came within the following general classification:

1. The diagnosis of childhood type was made prior to 1932.
2. Age of individual when first diagnosed childhood type was under 18 years.
3. A definite history of tuberculosis had been made in one or more members of the family.
4. Roentgenographic evidence of a childhood type lesion.

There were 9 of the above individuals who progressed to a pulmonary tuberculosis, which was confirmed by subsequent radiographic examination.

It is of interest to consider further some of the factors involved in the 9 cases in which progression of disease was noted.

FACTORS INVOLVED IN 9 CASES

Exposure to Tuberculosis—In each of the 9 families, there were one or more primary cases of pulmonary tuberculosis. In 6 families, there was 1 case, in 2 there were 2 cases, and in 1 family, 3 cases. In addition, 1 family had also a case of tuberculous meningitis. Each of these diagnoses was made prior to the diagnosis of childhood type in the individual in this study. The tuberculous meningitis and 3 of the pulmonary diagnoses were made at

the time of death. Our records do not give reliable information as to the probable duration of illness before the date of death.

An attempt was made to estimate the exposure in days from the date of first diagnosis of the primary case to its termination in the home, either by death or removal to a sanatorium. Allowance was made for periods of hospitalization of the primary case. Three of the cases had some hospital care, but finally died in the home. There were a total of 1,942 days of exposure for the group. In 3 cases, the time ranged from 2 to 17 days, and in 4, from 509 to 686—thus an average of 242.7 days for each case.

It must be obvious that the actual period of exposure was much longer than from the time of diagnosis of the primary case, and would easily range from a few months to years, if we knew exactly the time of onset of disease in the original cases.

In each of 5 families, the primary case of tuberculosis was removed by death, varying from 2 to 10 years before the case under discussion was diagnosed as childhood type. The progression to adult form occurred without other known sources of infection in these families. In 4 families, the primary case of tuberculosis was living at the time. A childhood diagnosis was made, and in 3 at the date the adult pulmonary type was made. In 1 of the latter families, the primary case is in a sanatorium where he was admitted shortly after diagnosis.

Bacilli in Sputa of Primary Cases—In the known primary sources in the 7 families in which a diagnosis was made before death, there were 9 cases known to have had bacilli in their sputum. The pulmonary cases diagnosed at time of death undoubtedly were likewise infectious.

Hospitalization of Primary Cases—All of the primary sources in the 9 families, excepting 3, had some period of hospitalization during the period of exposure.

Deaths Among Primary Cases—Of the 13 sources of primary infection, all but 1 had died at the time this study was made. The 1 case still living has been in a sanatorium since diagnosis. Practically all of the adults have been examined one or more times during the period of supervision. There are a few children in 2 families younger than the case included in this study, that have not as yet been examined. The oldest is 10 years, and the others average under 5 years. All unexamined individuals, adults, or children, are, according to all available information from our nursing service, in good health, and would not be considered as possible sources of reinfection.

Analysis of Cases Showing Progression of Disease—Sex—There were 7 females and 2 males.

Age at Time of Diagnosis—A diagnosis of childhood type was made at an average age of 12 years, the youngest 7 and the oldest 18 years.

A diagnosis of adult pulmonary forms was made at an average age of 15.1 years. The average days between the childhood type and adult pulmonary form was for the 9 cases, 993 days, or 2 years, 8 months, and 23 days.

Bacilli in Sputa—Only 2 of the 9 cases have shown bacilli in their sputa to our knowledge.

Hospitalization—Five of the 9 cases have had some period of hospitalization during the period of supervision.

Deaths—One child who progressed to an adult form has since died of tuberculosis.

DISCUSSION

A review of the findings of certain investigators dealing with the observed progression of childhood type tuberculosis to an adult pulmonary form indicates a wide variation from 0.04

per cent by Stewart to 4.1 per cent by Hall and Chang, the latter dealing with an older age group than the former. The reports from New Haven studies vary widely from 0.9 per cent to 11 per cent. The most recent analysis of New Haven data reported herewith as 5.8 per cent differs from Boles's report chiefly in that it is confined to New Haven residents, whereas the latter covered many patients registered at the New Haven Dispensary from many adjoining communities. The only apparent reason for this variation is that Boles's cases were possibly exposed to greater infection risks than those individuals studied as New Haven residents. Since 1927, New Haven authorities have placed considerable emphasis on hospitalization of the open case; in fact, no case of open tuberculosis, once discovered, need remain in the home. In 1928, about 1½ patients were hospitalized at all times per each annual death. By 1934, this ratio had been raised to 2½ patients. It is known that many of the smaller communities near New Haven, and utilizing the New Haven Dispensary services, have not been favored with similar hospital facilities. The possibility of casual infection in any of these cases must be considered, though we have no knowledge of its occurrence.

In view of the fact that none of the above reported results are entirely comparable, and, further, that the percentage of progressions vary so widely, it does not seem that we have as yet reached a point where we can with any degree of surety state the admininistrative importance or significance of the childhood type lesion.

It is important that more extensive data be collected on this problem, as it is one of fundamental importance in tuberculosis administration. If it is found that much less than 1 per cent of cases will show progression, it would not seem justifiable to set in motion extensive case-finding facilities with the costs involved to discover lesions of primary infection. If, on the other hand, the most recent experience reported herewith for New Haven is a reasonably accurate average, then we should include in our tuberculosis program the necessary machinery to detect early lesions and the necessary supervision through the danger period.

It is of some interest to note that practically all cases observed by others and referred to in this report, as well as our own, occurred among the adolescent age group.

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Bacteria on Fresh Fruit

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MICROÖRGANISMS held to be responsible for infections have been isolated from fruits, such as dates and melons.[1, 2, 3] The present report is concerned with an attempt to isolate from fresh fruits bacteria similar to the causative species which have been cultured from cases of infectious diarrhea (summer diarrhea, or gastro-enteritis) admitted to the Hospital for Sick Children, Toronto.[4, 5]

It has been shown that flies have probably served as vectors of these colon-typhoid-dysentery species.[5] The prevalence of flies prior to and during the seasonal period when these cases are epidemic suggested that the above mentioned bacteria might be conveyed by these insects to fruit which is abundant in the stalls during the same chronological period. The fact that such fruit is also handled by the vendor offered the possibility of contamination directly from human sources.

During August and September, 1933, 8 lots of fruit were purchased from stores located at different points in the city. This fruit was displayed for sale either inside or outside the front of the shop where it was quite accessible to insects. The vendor transferred the purchases — apples, pears, plums, peaches, crab-apples, grapes, and tomatoes—to paper bags in which they were taken directly to the laboratory. With sterile forceps, these fruits were transferred to sterile beakers in which they were washed with sterile normal saline buffered with sodium and potassium phosphates to pH 7.0. The saline was then centrifuged and part of the sediment was spread upon MacConkey bile salt lactose agar and upon blood agar plates. Sterile broth was added to the remaining sediment which was then incubated over night, after which a loop of culture was spread upon similar plates. After incubation, a large selection of colonies which presented differences in appearance were transferred to agar slopes and an attempt made to identify them culturally. The color, shape, and texture of the cultures were noted. Films from each culture were stained by Gram's method. The following tests were carried out: (1) motility, using an 18 hour peptone water culture; (2) indol, using the Ehrlich reagent after at least 5 days' incubation; (3) methyl red and Voges-Proskauer using the colon bacilli isolated; (4) Koser's citrate test; (5) gas production in dextrose peptone water only. Lead acetate, litmus milk and gelatine medium were also used. The production of acid was shown in peptone water medium containing Andrade's indicator and, separately, 1 per cent of the following alcohols or carbohydrates: lactose, dextrose, maltose, saccharose, xylose, mannite, arabinose, salicin, and raffinose.

Identification of the various species enumerated was accomplished by descriptions compiled from various sources.[6–10]

The following species were identified:

Micrococcus percitreus 2 cultures
Mic. candidus 1
Staph. pharyngis 6
Staph. tetragenus 1
Staph. subflavus 6
Staph. epidermidis 3
Staph. aurantiacus 1
Staph. citreus 2
Sarcina lutea 1
Proteus mirabilis 1
Alcaligenes marshalii 31
Al. bookeri 10
Al. albus 6
Al. fecalis 10
Aerobacter aerogenes 39
Aer. levans 2
Aer. cloacae 9
B. coli communis 12
B. coli communior 1
B. oxytocus perniciosus 1
B. alkalescens 3
B. dispar 1
B. dysenteriae Sonne (?) 3

The following species grew in Koser's citrate medium: *Mic. candidus, Prot. mirabilis; Al. marshalii, Al. bookeri; Al. fecalis;* the aerobacter species; *B. coli communis* and *communior; B. alkalescens* and *B. dispar.*

The remaining species failed to grow with the exception of *Staph. citreus* and the *B. dysenteriae* Sonne (?) which were not tested.

Staphylococci were found on fruit from each source, and hemolysis was demonstrated by a strain of *S. aureus* isolated from one lot. *B. subtilis* which was always hemolytic was present in the cultures from all sources. Hemolysis was shown by *A. marshalii* and *A. fecalis.* In addition to the various species of Alcaligenes noted, 4 unidentified cultures presumed to belong to that genus were recovered. In regard to the strains which gave the cultural reactions of *B. dysenteriae* Sonne, no agglutination was obtained when they were tested with pure R and S agglutinating sera. A strain of *B. fluorescens* and 3 yeasts were isolated. Fifty cultures of unclassed proteolytic bacilli, 8 unclassified Gram-positive cocci and 33 other unidentified cultures, mainly Gram-negative bacilli, were found.

DISCUSSION

The majority of the species of bacteria identified in this study were probably of soil origin and therefore were of little significance as probable causative factors in human disease. However one strain of *B. dispar* was isolated which is held to be the cause of dysentery in man.[11] Three strains of *B. alkalescens* which are not considered pathogenic [8] were obtained. The presence of members of the colon group may indicate pollution from fecal sources. *B. oxytocus perniciosus* has been isolated from soil and from the alimentary tract of humans.[7]

Gray [12] reported that *B. aerogenes* was practically universally present although in small numbers in stools of normal adult humans, but its preponderance in numbers in water over that of *B. coli* may indicate long past fecal contamination, and, as far as water is concerned, may be taken as indicating freedom on the part of the water from pathogenic microörganisms including *B. typhosus* and *B. paratyphosus* Beta.

The strains of *B. coli communis* and *B. coli communior* which were MR + and VP — grew in the citrate medium which is not in agreement with the classification of the majority of fecal colon strains according to Koser's work.[13] They may therefore be assigned to an intermediate group which, although at times found in feces, are not normally inhabitants of the intestinal canal.[8] Bardsley [14] found:

> . . . that organisms of the coliform group are not widely distributed in nature except where fecal contamination has taken place at some period more or less remote. . . . that the occurrence of *Aer. aerogenes* and the intermediate type in food supplies may be due to fecal pollution although the presence of these bacteria in the absence of *B. coli* would seem to suggest that the pollution had not been recent.

If fecal pollution of fruits by flies or human hands does occur the bacteria transferred thereto do not remain viable for a very long period. In order to test this point the following experiment was carried out:

A tomato and 2 apples placed in a sterile covered beaker were sprayed with a saline suspension of *B. dysenteriae* Sonne, and then allowed to stand at room temperature for 32 days. At intervals a sterile swab moistened with sterile broth was rubbed over the surface of the fruit and then rubbed over sterile MacConkey lactose bile salt agar. The species was obtained from the surface of the tomato up to the end of 2 days but not after 6 days; it survived for 10 but not for 18 days in the flesh of the tomato, a fissure having developed which permitted internal contamination. It was obtained for 6 but not for 8 days from the skin of an apple.

SUMMARY AND CONCLUSION

1. A study of the bacteria on the skins of fresh fruit yielded in addition to staphylococci, proteolytic and alcaligenes bacilli, 1 strain of *B. dispar*, and 3 of *B. alkalescens*.

Thirty-nine strains of *B. aerogenes*, 12 of *B. coli communis*, 1 of *B. coli communior* and 1 of *B. oxytocus perniciosus* were cultured. The coli communis and coli communior strains appeared to be of the intermediate type.

2. The presence of these species on fruit may suggest pollution from fecal sources.

3. *B. dysenteriae* Sonne persisted on the surface of tomato for at least 48 hours, and for 10 days in the tomato tissue. It was not cultured after 8 days from the skin of an apple.

A study of bacteria isolated from fresh fruit has been carried out. The presence of members of the colon and dysentery groups of Gram-negative bacilli suggests possible fecal contamination. However, no widely accepted pathogens of the colon-typhoid-dysentery group held responsible for severe summer diarrheas in infants and children were obtained.

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Diphtheria in Grays Harbor County, Washington

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THE Grays Harbor Graduate Nurses Association in 1933 was composed of a group of about 35 public health minded members, confronted with an urgent community need. At their meeting in March discussion revealed that the diphtheria situation in the county was acute and immediate action was needed. Private duty nurses found diphtheria prevalent. The Metropolitan and Red Cross nurse also had found many cases of the dread disease. A number of deaths, cases of paralysis, and heart complications had come to our notice, stressing the great need for action. These were all too often found in homes where medical and nursing care were not available, through circumstances brought about by the depression and a lack of general knowledge of the situation. The general public was totally unaware of the existence of the disease in the community, with the result that the contagion was very rapidly spreading.

The county had no funds available to combat the spread of the disease and the state had never made provision for any type of immunization. Many of the nurses had children of their own and they especially realized the need of immunization. The time also seemed opportune, as many of the nurses were unemployed and it was obvious that any work done would have to be volunteer and that materials would have to be purchased as economically as possible.

The president of the association was vitally interested in the situation. Some one courageously made the motion "to recommend immunization and assist in the inoculation." The project was to be a county-wide campaign against the spread of the disease.

Mrs. Mae Burwell was made chairman of the project. The county health officer was enthusiastic and secured the biologics through the State Health Department at a discount. A small amount of this work done in the county a few years before gave a basis for the per capita cost.

Action followed rapidly. Letters were written to the Grays Harbor Medical Association by a committee of nurses, and each physician was called on by the committee. The members of the Medical Association voted to give their services. Coöperation of the county and city superintendents of schools was needed and they were unanimously in favor of the project. Letters, through the schools, were sent into all homes to acquaint the parents with the necessity for treatment and to ascertain the number who would wish immunization. The schools then sent out notices giving the dates of the clinics.

The project grew in scope to include preschool children, parents, and teachers. In all, 102 clinics were held and more than 5,900 persons immunized, each person receiving in practically all cases, 3 inoculations. Cards were made for each child as a record, and certificates given each by the doctor at the last clinic.

The Grays Harbor Broadcasting Sta-

tion and the newspapers also greatly assisted in the matter of arranging these clinics. Interest in the project grew. Many nurses who were married and had retired from active work became interested and gladly gave their time. Many parents, when they realized the necessity for the treatment, took their children to their family physicians for inoculation—this made many immunizations of which the nurses' Association had no record—showing the educational value was far reaching, as immunization was discussed in every home in the county.

Sixteen doctors volunteered their services and an average of 5 nurses attended each clinic. Transportation was necessary as the county is larger than some of our New England States and in several instances necessitated a 50 mile drive. The county was districted and small rural schools were grouped. Doctors and nurses started at the schools farthest away and worked their way homeward. Teachers gave their time and service willingly.

Standardization of materials and equipment was impossible, as each doctor employed his own technic, with which the nurses complied. Sterilization of equipment was not the least of the problems confronting the nurses. Some of them having steam pressure cookers and others having electric hot plates, assumed the responsibility of sterilizing the equipment for the clinics.

Dates for the clinics had to be made to meet the convenience of the doctors and the schools, both public and parochial.

Financing the project proved to be the biggest problem. So anxious were nurses and doctors for the immunization that they failed to stress the necessity for each person treated to contribute the small fee of $.25. The cost of all correspondence, long distance telephone calls, drug supplies, equipment, as well as some laboratory expense for throat cultures, and a part of the transportation, was paid by the nurses.

The American Legion Auxiliary assisted by having some one present at many of the clinics to receive the fees. They took charge of this money, and paid bills as long as the funds lasted. They also gave $25 to the project.

The Orthopedic Auxiliary assisted with the transportation, providing cars and drivers. The Crescent Orthopedic assisted financially by contributing $10.

The public became conscious of the need and were anxious for immunization, but the project grew to such proportions that it became too burdensome for volunteer labor, and had to be abandoned. Had there been funds available, county-wide immunization for smallpox and more diphtheria immunization could have been accomplished. Parents were invited to the clinics and doctors dispensed information willingly, answering many questions—thus the clinics truly were an unprecedented opportunity for public health education.

When the last clinic had been held, schools closed for the summer, and the last money turned in, the bills received showed a deficit of $312, which did not seem a large amount when compared with the total cost of the clinics, approximately $1,214, but it looked tremendous when faced by the Grays Harbor Nurses Association. A dance was given which netted a profit of $57. Each school which had not paid was written to in the fall when school opened, but this availed little, though one city school collected $22, one parochial school $10, and a few schools sent small warrants. These, with the contributions mentioned brought the total debt down to $188. The County Commissioners, who had promised the County Health Office to help if there were a deficit, were then approached, and very graciously agreed to pay this balance.

These troubles were small when compared with the gratifying results accomplished.

The effectiveness of the project can now be determined by the report from the State Department of Health, dated April 4, 1935, which is as follows:

	1933		1934	
Diphtheria	*Cases*	*Deaths*	*Cases*	*Deaths*
Grays Harbor County	5	1	2	..
Aberdeen	41	2	8	..
Hoquiam	14	2	2	..
Totals for county	60	5	12	0

In addition we are positive that many cases were not detected or reported to the Department of Health.

We have no record of any lasting harmful effects occurring in these clinics from the use of the "Toxoid."

NOTE: Were it possible, we would like to make special mention of many who contributed their time and special abilities, without which a project which involved so much detail and work could not have been carried out so successfully, and been made so pleasant.

Tacoma, Wash., Makes Progress

THE first free health survey in connection with the City Health Conservation Contests was awarded to Tacoma, Wash., and made in the fall of 1934.

Dr. Atwater, Executive Secretary of the American Public Health Association, was in Tacoma on July 10 and observed many worth while results of the survey. An excellent health council with splendid representation of all organizations has been organized. Definite improvement has been effected in the field of vital statistics and in venereal disease services, under Dr. S. M. Cresswell, City Health Officer. More effective coöperation with the school medical service is reported, with some 9,200 vaccinations. Tacoma Junior League provides a secretary for the Health Council. A very effective committee on public health education under the direction of Dr. Whittaker is working closely with physicians and dentists, among whom classes in effective public speaking are being organized. It is reported that the Western Washington Fair Association has given the Tacoma Health Council a permanent assignment of space for regular exhibits and has placed in its hands the censorship of all health, food and drug exhibits.

Flipping Device for Flange Rubber Stoppers

V. T. ŠCHUHARDT AND J. H. BREWER

Assistant Director, and Bacteriologist, State Department of Health Laboratories, Austin, Tex.

THE advantages of the flange type rubber stopper for the safe distribution of various bottled biological products are obvious. The difficulty of flipping the flanges by hand during the process of bottling, however, renders the use of this type of stopper almost impossible, especially if rubber gloves are worn. Since we were not aware of any device on the market for performing this rather simple but important act, we decided to develop a mechanical flipper for our use in the laboratory.* The instrument has proved so thoroughly satisfactory that we feel it might be of value to others who are producing biological products.

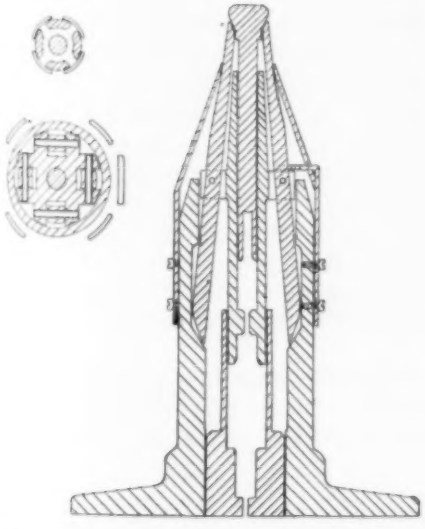

FIGURE I—Sectional Views of Flipping Device

The device is built of bronze and consists of four movable arms pivoted

FIGURE II—Method of Operating Mechanical Flange Flipper

at the center and sliding into a tubular base. The spreading action is obtained by a double cam arrangement. The first expansion is obtained by forcing the beveled nose-piece of the instrument down between the four arms, each of which is beveled at the top on the inside. The expansion is completed by

* We wish to give credit and express our appreciation to J. R. Blocker, machinist at the University of Texas, for perfecting and building the instrument.

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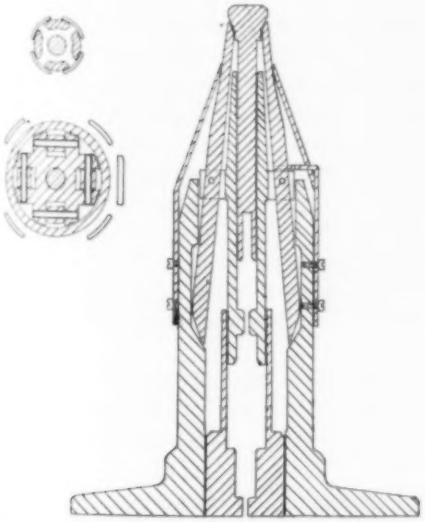

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the cam action due to the outside bevel at the bottom of the arms sliding down the bevel on the inside of the tubular base. This double expansion spreads the top of the arms sufficiently to encircle completely the lip of the bottle. As the arms move downward the edge of the stopper flange comes in contact with the top of the flippers. The latter consist of four bent strips of spring brass which are attached to the base and fit snugly against the outside of the movable arms. The continued downward movement of the bottle causes the flipping of the stopper flange. The flippers then slide on over the lip and stretch the flange into place around the neck of the bottle. With the release of downward pressure two springs force the arms and nose-piece back to their resting position. One of the arms travels through a groove in a bent strip of bronze fastened to the base. This prevents rotary movement and keeps the arms in position relative to the four fixed flippers.

By varying the length and size of the arms and flippers and the circumference of the nose-piece an instrument can be made to use with any of the larger size serum bottles and flange stoppers.

A Neglected Opportunity for the Control of Respiratory Disease*

HOMER N. CALVER, F.A.P.H.A. (*Life Member*)
Secretary, Public Health Committee of The Cup and Container Institute, New York, N. Y.

EVERY health officer at some time feels that he is like a juggler, keeping a dozen different things going in the air at the same time or balancing a variety of programs on the end of his nose. The wise health officer does not attempt to juggle everything at once, lest the whole collection come tumbling about his head. Instead, he varies his program from time to time, pushing first a diphtheria campaign, later the early diagnosis of tuberculosis, a child health day, or a summer roundup, or something else. Thus in the course of a year he has kept his whole program alive, kept his staff interested, and reaped public approbation through the newspaper support which can be given to special campaigns but is more difficult to get for routine activities.

Emphasis in public health programs changes like women's fashions. A new discovery, pressure waves from voluntary groups, enthusiasm of a specialist, sweep our activities this way and that, mold our efforts and force the Cinderellas of our program to the background while the more popular sisters shine in the light of current professional acclaim.

On what then can the health officer base his selection of activities? There is, of course, the *Appraisal Form* of the American Public Health Association, and no health officer should attempt to run a health department without this as his constant guide; yet this document through its changing editions, reflects the changing favorites in our public health esteem.

It is desirable, from time to time, to take counsel with ourselves and examine the appropriateness of our activities. In such a stock-taking there are three simple practical criteria which are sound and which any health officer can use in determining where to direct his major efforts.

The first is that of disease prevalence. What are the biggest community health problems as indicated by morbidity and mortality rates and other statistics? If there were no other factors to be considered, these figures would at once clearly determine our attack. However, important as these figures are, this criterion cannot be used alone because we do not have any known means of effective attack on some of these rates.

The second, therefore, is, What are the known effective procedures? If this criterion alone were rigidly applied, our program would be quite elemental because there are, in fact, only a few procedures which are infallible: vaccination, inoculation against diphtheria and typhoid, pasteurization, water purification and a few others.

* Presented at the 11th Annual Meeting of the Pennsylvania Public Health Association, Harrisburg, Pa., May 21, 1935.

In addition to these two scientific criteria, there is a third practical consideration which the professional man is frequently apt to minimize. That is public opinion. Since we derive our support from public funds, we must do some of those things which the people who support us think we should do. Only in this way can we get continued support to do the things we want to do, pending that happy time when, through sufficient public education, the things we want to do and the things the public want us to do become identical.

THE CRITERION OF STATISTICS

Applying the first of these criteria to our local public health picture, we find a large group of diseases high in the list of causes of death, disease, and disability. They are the so-called respiratory diseases—pneumonia, influenza, scarlet fever, measles, tuberculosis, and others. Most workers believe that all of these diseases are communicable; yet nothing done so far has had any considerable effect in preventing their communication. We believe that all of these enter the body through the mouth; yet we have, in our public health procedures, constructed almost no barriers on this route of infection. We believe that most of them are principally infectious in their early stages; yet we are surprised that quarantine and other post-symptom measures have so little effect. Practically we have, as administrators, accepted defeat in the control of respiratory disease and are awaiting the discovery of some new vaccine, or other sure and easy process of creating an immune population that we will not have to bother about. While thus waiting for the laboratory to produce a solution, people are dying and morbidity rates do not decrease. According to the criterion of statistics, major efforts of the health department should be directed to control of respiratory diseases. I need not call your attention to the fact that the full picture of human disability is not given in the morbidity rates for these diseases. They may frequently be the initial factor in contributing to premature death in the later years of the individuals affected. A possibility of conquering just one of these diseases, as we have conquered yellow fever, cholera, typhoid fever, and diphtheria, is a great opportunity. Any possibility of controlling all of them is worth serious consideration.

WAITING ON THE LABORATORY

This brings us to a consideration of the second criterion—What can we do about control of respiratory disease? The defeatist attitude has not produced the brilliant public health victories of the past, and the continued high prevalence of respiratory diseases must act as a challenge to the present generation. In facing this challenge let us examine our current measures of attempted control. They can be classified under four headings: education, quarantine, medical service, and sanitation.

Programs of health education have been specifically aimed at inducing people to build their general health so that they may more successfully resist infection; to secure prompt medical attention; and to avoid infecting themselves and others. In view of the tremendous task to be done—the overcoming of prejudice, inertia and ignorance—changing habits of thought and actions of 120,000,000 people—the public health education program in this country has been puerilely weak. This is not in criticism of all those who with and without training for the task have worked sincerely in this field without much encouragement or anything like adequate support from appropriating bodies. To be thoroughly effective health education programs would require budgets resembling those of

national commercial advertising campaigns. Until funds for public health education have increased many-fold and our technics have become more certain, progress by the educational route will be slow.

Control through quarantine and isolation has been disappointing and some will say that these measures as ordinarily practised are practically without effect in preventing the spread of respiratory diseases. Most of these diseases are infectious in their incipient stages; many occur in mild form and are never diagnosed or reported; carriers play a part in the dissemination of some of them. Quarantine and isolation of the cases actually diagnosed and reported therefore segregate only a part of the potentially infectious population and this part temporarily, too late, and usually incompletely. Quarantine as a standard procedure in some of these diseases has already become less severe; at best it is an inadequate measure of control.

Medical treatment and nursing care of diagnosed cases are not to be omitted in listing measure of control, particularly as these services reduce the infectiousness of the attacked individual. They also may have a material effect in reducing the incidence or seriousness of after effects, postpone death, and thus are quite definitely public health measures with a bearing on the death rate. Good medical service and nursing care are essential in the public health control of any disease. They do not in themselves furnish a program.

Of the four measures of control then there are education which is weak, quarantine which is uncertain, medical service which is insufficient, leaving sanitation to be considered. The control of respiratory disease through sanitary measures has seldom been tried thoroughly in a sustained program. While waiting for the laboratory to discover a readier measure of control, this may offer a fruitful means of attack. Sanitation as here considered means the establishment of procedures wherever possible to prevent the mouth discharges of infectious persons from being imbibed by others.

The only important point at which the health officer has it in his power to interpose barriers to this salivary exchange is in his supervision of public places serving food and drink. Furthermore, he is the only person who can erect and maintain this barrier. Among all of our public health programs sanitation of the public germ exchange as it exists today is one of the most difficult. The problem is complicated by lack of inspectors, uncertainty of procedures, the tremendous increase of public eating places, particularly of the rush order or counter type, and the hostility of food and drink dispensers to any program that requires them to spend money.

A recent and serious factor is the return of the saloon, or as we politely call it, the tavern. In prohibition days we could ignore speak-easies because they were supposed not to exist, and without legal existence we could not enforce public health ordinances to protect their customers. Now that the bar has moved from the basement to the first floor, or from the back room to the front room, we are necessarily faced with a sudden increase in our problem of sanitary supervision. There is a tradition among bar tenders that beer glasses should not be washed. This is fostered by the brewers. It has caused a falling off in the standards for all glass washing, according to the Los Angeles City Health Department.[1] With beer dispensing leading the downhill parade, vigorous action by health officers is called for if the gains which have been made are to be preserved. Already Vincent's angina is on the increase, and many communities have reported epidemics of this disease.

The U. S. Public Health Service,[2] the American Medical Association,[3] and countless health authorities have reiterated that the commonly used unwashed drinking glass or other drinking or eating utensils may transmit infections; yet by and large, we have really done very little to eliminate the common drinking cup as it is seen at soda fountains, roadside stands, and quick lunch counters. A dip and splash in a tank of dirty water does not sterilize, yet this is about all the washing that most of our eating and drinking utensils get in many public places serving food and drink today. If we do not take this situation seriously, we cannot expect the public or the dispenser to.

Here is a statement from a news release of the health department of a large city:

> At the larger resorts two men are on duty night and day and they see to it that hamburger and hot dogs stand keep meats and breads from possible contamination. Glass washing and the scalding of all dishes and cutlery is closely watched by these inspectors.

Such a statement is an insult to the intelligence of the thousands of people who patronize these stands and whose eyes tell them that glasses are not washed and dishes and cutlery are not scalded. But when an able and distinguished health officer makes a solemn statement of this nature and a child can see that the situation is otherwise, he invites the purveyor's disrespect of the law and dulls the sanitary sensibilities of the public.

There is no insuperable impediment to the sterilization of public eating and drinking utensils. The problem has been partly met in some places by the use of individual cups made of paper which are used once and thrown away. But where individual service of this kind is not desired there are available dishwashing machines of all sizes which effectively cleanse and sterilize. If this equipment cannot be afforded there are inexpensive means of sterilizing by hot water, steam, or chemicals.

The importance of sterilization of commonly used eating and drinking utensils has been shown by many investigators. The studies by Cumming,[4, 5] and by Lynch and Cumming[6] on the transmission of influenza are particularly thorough and significant. Nevertheless there is still a great need for continued research in this field. Many questions need further exploration such as:

1. What temperature of wash waters and exposure times are necessary to secure adequate bacterial destruction?
2. What criterion can be established for determining when cleansing is "adequate"?
3. What is the relative effectiveness under operating conditions of chemical sterilization versus heat sterilization?
4. Is there a test organism that can be used to measure pollution from respiratory sources as *B. coli* is used to measure pollution from intestinal sources?

In addition there is need for a simple standard method of laboratory examination by which the health officer can determine whether or not a dispenser of food and drink is obeying laws and ordinances. An inspection of the premises will not suffice. A standard method of examination of wash water or of dishes which could be used as a routine such as we have for the examination of water and sewage and milk would be most helpful in enforcement and would aid materially in comparing the results by various investigators in this field. Other more extensive studies, particularly in the realm of epidemiology, offer prospects of interesting and important results. These are problems which are particularly appropriate for the State Health Department and the universities of this state working in coöperation with local health officers.

Another phase of the program in which the state or national health au-

thorities may well take the leadership is in the development of model laws and ordinances. Present regulations concerning the sanitary care of eating and drinking utensils are frequently ambiguous, sometimes impracticable, and in a few jurisdictions nonexistent. The present legal situation is analogous to that which existed in the field of milk sanitation before the adoption and promulgation of the model milk code by the U. S. Public Health Service. State and national leadership in the preparation of model laws will follow if local health officers demand it.

In the meantime much can be done under existing rules. The immediate arm of the health officer in this job is the inspector. With the limited inspection service which most health departments have there is all the more need for focusing this service on the most important tasks. Too often the inspector spends most of his time in observing and reporting on cleanliness of walls and floors and ceilings, whereas the habits of employees and the thoroughness of dishwashing have a more direct relationship to the prevention of disease. Many inspectors enter their jobs with but little training. The only training they get usually is a few days' observation of how the other inspectors handle their work. Thus the errors and deficiencies of the inspection service are carried on from one generation of inspectors to another. These men are important links in the chain of public health protection. A specific course of training for them would be a valuable aid. One city health department (Detroit) goes beyond this and has a program of instruction for the food handlers themselves. The universal adoption of this plan is worth consideration. The present offers a unique opportunity for concentrating on this task through the use of relief workers. The city of Chicago has recently added 200 inspectors to its staff by this method. The use of more inspectors well trained for their jobs and focusing their efforts specifically on points of danger offers health officers another possible means of controlling respiratory diseases. To reach this objective requires more than a mere overhauling of the inspection service—it requires a completely new approach which will recognize the dignity of the task.

Finally there is a fourth weapon which can be used with little expense, namely, publicity. This was a powerful weapon in improving the milk supply and can be used with equal or greater effect in this field. Most of the things a health officer does are unobserved by the public. They can see no tangible evidence of his activity. The sanitary condition of public eating and drinking places is a matter of almost daily concern to a large number of the health officer's public. This latent interest can be mobilized behind the health officer. It is a force that can be brought to bear with particular strength—for dispensers of food and drink who obey the law, and against those who wilfully and repeatedly violate it. There are few communities in which the citizens would not welcome an opportunity to aid the health officer in a problem of public housekeeping such as this—one which exposes them to unpleasant conditions and potential dangers. Indeed, the health officer who takes the opportunity for leadership of this kind will win for himself a measure of esteem and approbation which should carry over for his whole program.

This brings us back to the third criterion for determining a program—public opinion. There is an unmistakable tide in modern America toward a higher standard of living, toward cleanliness and away from dirtiness. The situation which exists in public eating and drinking places, particularly soda fountains and other counter service

places, is an anachronism. It is on a par with the common drinking cup in railroad cars, and spittoons in the office. The people sense this but, not knowing how to change it, they accept it as the older generation accepted the open privy, and make jokes about it. At one eastern university when a couple of students go across the street for a milk shake or a "dope" they say "let's go over and swap spit." The health officer can capitalize on this latent public feeling and build good will for himself, his department, and his city administration. There is reasonable evidence to indicate that it offers an opportunity for the control of respiratory disease.

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Hermann M. Biggs Memorial Lecture

BIGGS had an orderly and logical mind. These qualities tempered his idealism and his professional vision. "Think things through" was his motto. No one before or since his time has combined with such idealism so practical a program for meeting the public health and medical needs of his state. Had his program of 1920 been adopted in New York State and carried out in the several communities, we should have today no such serious problems in medical care and medical economics as now confront us.—Thomas Parran, Jr.

EDITORIAL SECTION

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THE PASTEURIZATION OF CERTIFIED MILK

AN important and far-reaching event in the progress of certified milk, and of milk sanitation generally, was the approval given to permissive pasteurization by the American Association of Medical Milk Commissions at their annual meeting in Atlantic City, N. J., in June, 1935. Following a remarkable program of papers devoted to this topic, the Association voted unanimously to include in its Methods and Standards, definitions and specifications for Certified Milk—Pasteurized, an action which will be received with acclaim by all health officials.

For more than 40 years certified milk has been recognized as a superior grade of market milk. It was developed as a quality milk supply in which physicians, sanitarians, and the public might have confidence, and it has always been produced by leaders in the dairy industry in accordance with uniform, national standards. These exceptionally high standards have been enforced not only by health authorities but by impartial medical milk commissions representing local medical associations. Today there are 81 such commissions in some 25 states.

Despite the high quality and excellent sanitary record of certified milk, and despite the somewhat limited sale of this necessarily more expensive product, many health officials have felt that pasteurization of it would be desirable and logical, since this process would add the final factor of safety to a clean milk of unusual quality. Numerous scientific investigations have shown that pasteurization would in no way impair the excellent nutritional qualities of certified milk.

The unmistakable trend toward pasteurization was recognized several years ago when the certified milk sold in Boston was subjected to this beneficial process. Today, the demand for pasteurized certified milk in this city exceeds that for the unpasteurized, an experience which has also been duplicated in a number of other communities where certified milk—pasteurized has been introduced in recent years.

Until last June these certified milks—pasteurized had not been sanctioned by the American Association of Medical Milk Commissions, and considerable opposition had been registered when the use of this process for certified milks was first proposed some 5 years ago. The present decision is, therefore, all the more

gratifying in revealing a spirit of progress, and of coöperation with health officials who have been advocates of the more general pasteurization of all market milks.

Since this wise procedure also has been endorsed by the Certified Milk Producers' Association of America, a substantial increase in the distribution of certified milk—pasteurized may be expected in the future. That the more extensive adoption of the process will result in greater public appreciation of this superior milk seems likely, especially if there is created a new national organization for the purpose of promoting greater consumption of certified milk, as was proposed by one of the speakers at the Atlantic City meeting.

It was pointed out at that time, and we agree, that the action taken in favor of permissive pasteurization was a landmark in the development of certified milk, an episode which is as significant to dairy science and to public health as was the institution of certified milk itself in 1893. Physicians and consumers who desire a clean and safe raw milk can still obtain it, but an even greater proportion of discriminating physicians and consumers who prefer that the best milk obtainable be pasteurized will at last be satisfied. Health officials will now have added reasons for recommending and advocating increased consumption of these certified milks.

"HEALTH TODAY AND TOMORROW"

UNDER the above slogan, a campaign has been opened by the National Health Council, with special reference to the local campaigns of various organizations related to the health movement in the United States.

During a 5 months nation-wide campaign, the Council will seek to dramatize its various objectives. A program of surveys of community health agencies will culminate in October on a date to be chosen by each community around October 21. On that date it is proposed that an open town meeting will be held after the pattern of the New England town meeting. At that time local people will ask leading questions regarding the health agencies and social services available in that community. Questions will be asked whether they are well managed and how adequate the plans and appropriations are for the purposes of that particular community.

This campaign is to be specially promoted in about 400 cities of the United States where both the official and voluntary health and social work organizations have promised strong coöperation.

The American Public Health Association is one of the 17 participating agencies in the National Health Council. Although this plan is aimed more directly toward the promotion of interests of various "operating agencies," this professional society of public health workers has taken the position that there are wide possibilities of usefulness in this campaign. It is also our opinion that the guidance of such town meetings as those planned in October is so important as to demand the informed participation of those qualified to lead in the public health field. Wherever it can succeed in stimulating public interest and extending public information this campaign can materially benefit health department personnel in their relationships with the public and there can be provided excellent background material for campaigns to expand the budgets of health departments.

The *Chairman* of the Committee for this campaign is Louis I. Dublin, Ph.D., who is working with the President of the National Health Council, Colonel Theodore Roosevelt. Information and assistance in this campaign may be secured by addressing the Publicity Director, Margery Currey at the National Health Council, 50 West 50th Street, New York, N. Y.

THE COPELAND BILL

THIS Association, at the Indianapolis meeting in October, 1933, recorded, by resolution, the confidence of its members in the principles and purposes of the Federal Food and Drugs Bill then pending in Congress.

In the year and more since that action, much has happened in Congress. The original Copeland measure died with adjournment in 1934. The new Congress received a new Copeland Bill, which passed the Senate in May, 1935, and is, at this writing, before the Committee on Interstate and Foreign Commerce of the House. Various observers are of the opinion that the Bill will receive early consideration by that committee and that a strengthened Federal Food and Drugs Law will probably be enacted at this session of Congress.

The need of a new food and drug law was emphasized by President Roosevelt, in a message to Congress, a few months ago. "A measure is needed," he said, "which will extend the controls, formerly applicable only to labels, to advertising also; which will extend protection to the trade in cosmetics; which will provide for a coöperative method of setting standards and for a system of inspection and enforcement, to reassure consumers grown hesitant and doubtful; and which will provide for a necessary flexibility in administration, as products and conditions change." In concluding his message, the President said:

> The great majority of those engaged in the trade in food and drugs do not need regulation. They observe the spirit as well as the letter of existing law. Present legislation ought to be directed, primarily, toward a small minority of invaders and chiselers. At the same time, even-handed regulation will not only outlaw the bad practices of the few, but will also protect the many from unscrupulous competition. It will, besides, provide a bulwark of consumer confidence throughout the business world.
>
> It is my hope that such legislation may be enacted at this session of the Congress.

The Copeland Bill, as passed by the Senate in May, will give to consumers new and additional protection, such as is not possible under the present law.

It prohibits false advertising of foods, drugs, and cosmetics.

It regulates the sale of cosmetics, requiring truthfulness in labeling and outlawing those injurious to health.

It prohibits, to a greater extent and under closer control than under existing laws, traffic in foods which are dangerous to health.

It bans the use of poisonous containers for food.

It requires adequate sanitation of establishments handling and manufacturing foods, drugs, and cosmetics.

It proscribes deceptive and slack-filled packages of foods and drugs.

It brings devices used as curative or preventive agents under the same regulation as drugs.

It provides for the regulation, for the protection of the consumer, of dangerous drugs and drugs subject to deterioration.

It makes provision for a Committee on Public Health to aid and advise the Secretary of Agriculture in promulgating regulation for the protection of the health of the public. It also provides for a Committee on Food Standards.

These committees, advisory in nature, are to be appointed by the President. The Public Health Committee is to consist of 5 members, designated without regard to political affiliation and with a view solely to scientific attainment and interest in public health, as it relates to foods, drugs, or cosmetics. The Committee on Food Standards is to have a membership of 7—3 representing the public, 2 representing the food industry, and 2 from the Food and Drugs Administration.

Members of the Public Health Committee and those members of the Food Standards Committee who represent the public are all prohibited from having any financial interest in the food, drugs, or cosmetics industry.

It is to be hoped that, when and if the Copeland Bill (S5) is passed by the House, it will be so amended as to permit the seizure, without restrictions, of shipments of drugs, foods, or cosmetics which are so misbranded as to be grossly deceptive.

The bill, as passed by the Senate, provides that only one seizure may be made of an alleged misbranded product, unless the enforcing officials can prove that the product is so misbranded as to render it imminently dangerous to health, or such misbranding has been the basis of a prior judgment in favor of the United States. This provision greatly limits the protective effects of the pending law in preventing the removal from the market of grossly misbranded products, which may not in themselves be "imminently" dangerous to the health of the consumer, but which would be valueless in the conditions indicated by the labeling.

The Copeland Bill (S5), as passed by the Senate and now before the House, will, if enacted into law, give to the consumer much needed added protection. Its principles and intent are the same as those contemplated by the first Copeland Bill, introduced in Congress in 1933, and approved by this Association in the resolution before mentioned. The reasons which influenced the Association in soliciting, in that resolution, the support of all members in behalf of the first Copeland Bill, apply with even greater force in the case of the Copeland Bill now pending.

MEDICAL HISTORY IN THE UNITED STATES

IT seems fair to credit the late Sir William Osler with having awakened interest in medical history in the United States. He was constantly looking up some great man of the past who had done big things in this country, though practically unknown to the present generation. Many arguments can be brought forward for the study of history. Dr. Osler said, ". . . I hold strongly with the statement that it is a sign of a dry age when the great men of the past are held in light esteem."

Another wise man who helped a great deal was the late Dr. Victor C. Vaughan. He told us that when cerebrospinal meningitis appeared in the United States it took us many months to learn facts about the epidemiology of the disease which had been demonstrated conclusively by French Army surgeons in the first half of the 19th century, the reason being that we did not know French history. He also pointed out that no one could claim to be learned in any specialty until he was fairly familiar with what had been done previously along the same line. This is an obvious fact, and yet too many in the medical profession fail to recognize it.

These statements are given point at the present moment when we learn that the *Annals of Medical History* is in danger of being discontinued, because, though it has many readers, it has few subscribers. It was founded under the editorship of Dr. Francis R. Packard, in 1917, and each number has been filled with interesting histories and reviews of literature. It is beautifully printed and is an ornament to any library. It would be a distinct loss if it had to be discontinued for any reason.

All of us can recall the desperate struggle which was carried on to keep alive

the *Index Medicus*, which was finally accomplished by merging it with the *Quarterly Cumulative Index of Current Medical Literature*, now published by the A. M. A., yet the medical profession would be handicapped without this publication.

The *Annals of Medical History* is necessary to us in this country, and we trust that interest enough can be aroused to secure sufficient subscribers to keep it going. This is another effort which might well be supported by some philanthropist, but it lacks the spectacular features which often carry a strong appeal.

America, though a new country, has produced many notable physicians and surgeons, who under the most trying circumstances and with meager facilities, have done great deeds for the advancement of their profession. Some of these men had European training and contacts with the older countries, but some of the most notable were pioneers in the truest sense, to whom God had given brains, resolution, and resourcefulness. While here and there the stories of different men are told, the *Annals of Medical History* is the only journal in the country which makes a business of collecting the histories of medical men and medical events. It could ill be spared.

PUBLIC HEALTH EDUCATION*

What Would You Like to See?—What kinds of materials, and what topics would you like to see at Health Education Headquarters at Milwaukee in October?

The editor of this department would like to hear from you.

The 1935 Health Education Institute—Elsewhere full details are published concerning the fourth institute conducted by the Public Health Education Section.

Those who enroll for the Institute in Milwaukee should bear in mind that *this year attention will be given to the problems of smaller cities and rural communities.* Those who come from larger places should not be disappointed and should not try to distract attention by any reference to their particular needs.

The Hall of Man in Buffalo—Buffalo may well become a Mecca for believers in the value of three-dimension displays in health education.

The Hall of Man, Buffalo Museum of Science, probably contains the largest collection of three-dimension health exhibits now available in this country.

A 20-page illustrated "Guide" is obtainable by sending *15 cents* to the Museum.

The Microphone in Health Education—"Social Work at the Microphone" takes only a few of its examples from the health field, but as a whole this practical discussion applies to health education broadcasting.

The contents includes: five principles of broadcasting, types of programs, production, listening, and listening groups.

The reading list is limited to references carefully selected from a number of titles for helpfulness to educational broadcasters in the health and social work field. Health education provides two of the most useful titles under "Radio Techniques," and health sources are named under "Collections of Talks or Plays."

Issued by Social Work Publicity Council, 130 East 22d St., New York, N. Y. 17 mimeographed pages. *40 cents.*

Town Meetings on Health—Elsewhere you have learned of the "Town Meeting" campaign sponsored by the national agencies represented in the National Health Council.

Diverse national and local activities will culminate in numerous "old fashioned New England town meetings" for the consideration of personal and community health.

Actively in charge are Margery Currey and Ralph M. Prouty, to be addressed at National Health Council, 50 W. 50th St., New York, N. Y.

Eager to Learn on the Job—One hundred and ten registered for the first Post-Graduate Study Course on Health Education, sponsored by the Committee on Health Education of the Conference of Tuberculosis Secretaries, and held preceding the recent annual meeting of the National Tuberculosis Association.

This record, and the equally too large attendance at the several Health Education Institutes in connection with

* Please address questions, samples of printed matter, criticism of anything which appears herein, etc., to Evart G. Routzahn, 130 East 22d St., New York, N. Y.

A.P.H.A. annual meetings, suggest that something should be done about it.

Some questions that seem to call for careful consideration:

1. What kinds of workers respond to these opportunities—classified as to job, experience, training, etc.?
2. What do they *think* that they need, and what do they actually *need*—as suggested by classification mentioned above?
3. What kind of a program should be planned, as well as the subject matter?
4. When and where could additional institutes be held to increase the total number of participants, and to reduce to manageable teaching numbers those present at each institute?
5. Could satisfactory programs be provided, and would there be a satisfactory registration for regional, or even state institutes?
6. Under what auspices could these more numerous institutes be held?

Probably such questions as the above should be considered even before taking up the details of number of sessions, fees, number of registrants to be accepted, how to screen the applicants to the best advantage of all concerned, and so on.

We hope that the Conference of Tuberculosis Secretaries, the Public Health Education Section, and the Committee on Professional Education of the A.P.H.A. will all participate in this important task of exploration.

"Syphilis—Press and Radio"—Under this title a special collection of material which has been printed or spoken will be displayed at Milwaukee in October.

Original clippings or copies of editorials and news stories, and copies of radio talks will be displayed.

We hope to receive copies of material which has been suppressed.

"I Will Drive Safely"—This slogan and pledge is offered by *Ladies' Home Journal*, Philadelphia. It is supported by a series of articles and editorials. In the June, 1935, issue Paul de Kruif argued that "Accidents Don't Happen." In July a page editorial submitted to its readers an emblem bearing the slogan, the emblem to be displayed on the rear of the car "as a token of your intention to drive carefully."

Write to Philadelphia for copies of the material issued by the *Ladies' Home Journal*.

The Summer Round-Up of Children—A total of 2,580 communities registered for the Summer Round-Up of Children, a project sponsored by the National Congress of Parents and Teachers, 1201 16th St., N.W., Washington, D. C.

Of those registering 1,417 communities were represented by units which carried through the plan. Children receiving the Round-Up examination numbered 92,268; 34,113 were vaccinated against smallpox; 27,101 received immunization against diphtheria in 1934.

Health workers may wish to ask for the 1934 report, and the detailed plan and work material for 1935.

Much remains to be done to carry to completion the 1935 Round-Up. Health authorities may readily locate the local units, if contacts have not been made already.

Again That Annual Report—In "Why Write or Print an Annual Report?" Dr. W. Frank Walker answers a group of questions which must be faced some time during the year:

> Shall I write an annual report? Why should I? What is to be gained by it? What should be the form? What shall I put in it?

The whole article is something to be read when those questions came up.

In conclusion Dr. Walker says:

> In deciding whether any detailed material should be included in the tabulation of service, the director should have clearly in mind

the purpose and advantage of including the material. Unless the figures go to support or illuminate the text already discussed or provide the reader with a background of detail which may be helpful to him later in deciding questions of policy, there is little point in including them. The mere fact that figures relating to the service have been collected over the year and the tabulation is available is no justification for taking the space in an annual report to present them, or the reader's time to consider them. When one considers the annual report as an opportunity to review critically the work of the organization, to present its services and problems to the executive board or to the public in a way in which they can be most readily understood, then one should have little difficulty in deciding what should be presented or, within certain limits, the most effective way of its presentation.

Supplementary to the above is "Monthly and Annual Reports," by A. J. Miller, with direct application to data collected by public health nursing groups.

Both articles in *Public Health Nursing*, 50 W. 50th St., New York, N. Y. June, 1935. *35 cents.*

We Are Not Discouraged—In "Progress and Trends in Public Health in North America," Surgeon General Cumming, U. S. Public Health Service, gives background material of considerable value.

Speaking of health education Dr. Cumming said:

> While we have often been discouraged by the apparently slow progress in educating our public in matters of public health, there nevertheless has been a dissemination of knowledge that even in the traditional field of public health endeavor little progress has been made against venereal diseases, that our infant mortality rate should be halved, that our maternal death rate is disconcertingly high, that because of our lowering birth rate and lengthened longevity we are an aging population, and that the problems of adult health are increasing in importance. The field of public health is broadened, the emphasis is shifting from accomplished environmental sanitation to personal hygiene and care. The people are aware of the great store of medical knowledge and the benefits which would follow if they were available for all. It is common knowledge that despite the self-abnegation, altruism, and devotion of our profession a large proportion of our peoples do not, and cannot, under our traditional relationships of doctors and public receive the benefits of this knowledge. The economic depression with its consequent necessity for governmental aid in relief along other lines has focused attention upon this defect in our social relationships.

Given before a joint session of Canadian health bodies. In *Canadian Public Health Journal*, 105 Bond St., Toronto 2, Ontario. June, 1935. *35 cents.*

"Are People Interested in Health?"—This question put editorially by "P.P.J." is answered in part by this statement:

> Some idea of interest in public health may be obtained from the fact that within the last ten years one large publishing house has distributed 700,000 copies of the National Health Series, the 24 little books on health prepared by the National Health Council.

In *Journal of Outdoor Life*, 50 W. 50th St., New York, N. Y. June, 1935. *15 cents.*

Health Education in June, 1935, Journal—*The American Journal of Public Health* carried references to health education in the June, 1934, issue.

In "Serving the Public for Health," by Vaughan (pages 681–686), are numerous references to health education including mention of:

> . . . a whole-time health service with a full-time health officer assisted by adequately trained health educators . . .

In "Serving the Public for Health," by Pomeroy (pages 687, 694):

> Public health education itself has distinct and specific limitations. The most successful campaigns of health education, in my opinion, rest partly upon individual health service.

In Dr. Pomeroy's summary:

> 3. Health education must include at pres-

ent both mass and personal instruction. In competition with cultism and quackery, demonstration and individual services are necessary to win many people back to scientific medicine.

See the whole of "Selling Health Department Members First on Health Education," by Williams (pages 715–719).

Also to be read in full is "The Community Program of Health Education," by Turner (pages 725–729).

Under "Toward the Solution of Social Medical Problems" (page 772), is mention of "an excellent distinction between health education and propaganda."

"What's a Committee?" quoted on page 740, reflects many a committee with a poor chairman, but its picture of "the ideal committee" is the expression of an ineffective chairman.

Massachusetts Wants to Know—And so do other states and cities want to know where to get health posters for school use.

A partial answer is supplied by "Some Posters on Child Health," an 8 page folder from American Child Health Association, 50 W. 50th St., New York, N. Y.

Here is the original request from Frank Kiernan, Massachusetts Tuberculosis League, Little Bldg., Boston:

> There is a demand in Massachusetts for health posters for elementary and secondary schools. The orange and black posters of Gerta Ries which have been popular for several years seem to have outlived their usefulness. Do you know of anyone in the country who has done anything notable during the past year along this line?

The "Conspiracy of Silence" Is Breaking—Additional reports in this issue encourage the belief that both radio and journalism will give up their hypocritical silence on the venereal diseases.

We hope for additional reports.

We hope also that newspaper clippings and letters will be sent to the two major broadcasting chains, addressing them at New York City.

Most people who write to newspapers and to broadcasting stations object to something. Hence it seems worth while also for health workers to encourage parents and others to thank their editors and their broadcasters when they talk normally and directly about syphilis, or when they permit others to do so.

Journal of Outdoor Life Passes—The *Journal of the Outdoor Life* will be discontinued in December, 1935.

Founded in 1904, and since 1910 published by the National Tuberculosis Association, this magazine was issued as an educational project, addressed primarily to tuberculosis patients.

The Board of Directors, at a recent meeting, decided upon the discontinuance, for reasons which have been summarized as follows:

> (1) The diminishing number of tuberculosis patients who read the magazine; (2) Because of changes in opinion on the part of physicians, both in sanatoria, and in private practice relative to its value as a patients' magazine.

It is to be hoped that some medium will be found to carry on some of the *Journal* features.

MAGAZINE ARTICLES

"Atlanta Thyroid Clinic," by A. L. Whatley. *Junior League Magazine,* 305 Park Ave., New York, N. Y. July, 1935. This is a sample of reports in the magazine on local health activities of Junior Leagues.

"Birth Control before the Medicos." Report of decision of House of Delegates at Atlantic City to appoint a committee to report next year on the legal and medical aspects of birth control. *Literary Digest,* 354 4th Ave., New York, N. Y. June 22, 1935. *10 cents.*

"Doctors, Patients, and the State," by John A. Hartwell, M.D., former

director of surgery at Bellevue Hospital, and chairman of Medical Advisory Committee, Emergency Relief Bureau. "To call attention to the fact that a problem in medical practice does exist and that socio-political forces are demanding its solution." *Harper's Magazine*, 49 E. 33d St., New York, N. Y. July, 1935. *40 cents.*

"Great Falls, Montana, Works on Anti-Tuberculosis Campaign," by R. B. Caples. What the local Kiwanis did, largely in coöperation with the City-County Health Department. *Kiwanis Magazine*, 520 N. Michigan Ave., Chicago, Ill. June, 1935. *15 cents.*

"Medical Magic," by David Dietz, science editor of Scripps-Howard. A series of feature articles on the scientific marvels behind disease and health.

"The Plight of Our Hospitals." Editorial on "a serious matter of public safety." *Saturday Evening Post.* March 16, 1935.

DATES AHEAD

Now is the time to gather photographs and movie pictures of outdoor activities in which health agencies are interested, or which they wish to further next winter.

All too often there is delay in getting satisfactory pictures from camps, sanatoria, bathing beaches, swimming, first aid, and so on.

Prints of news photographs, whether or not they are used in the papers, may prove useful in getting out printed matter.

Good amateur photographers or movie operators may well be cultivated at this season.

Careful search of the past may reveal an anniversary of some type which might be celebrated in the fall or winter, or at least could be used to advantage in a news story. One may rediscover a pioneer in health, a professional worker, or a prominent layman. The first printed report; the first educational leaflet; the first vital statistics for your community; or a "first" of some kind or other which could be used to advantage.

Note August topics which might be played up a year from now.

September is "Safety Highway Month." Write National Safety Council, 9 East 41st St., New York, N. Y., for information to be checked to see if you can do anything about it.

Does *Labor Day* have a health significance? Does it offer a chance to "point with pride" to better health conditions in and out of work places to which health agencies have contributed?

As school opens have we summer credits and fall obligations to discuss toward the better health of school children?

The annual meeting of the A.P.H.A. in October gives news value to many topics. Advance planning as to topics locally significant, and how to make use of the material presented at Milwaukee, should be resultful in your city or state.

Reorganization of the Federal Vital Statistics Division

AS Director of the Census, I am adopting this method of announcing a reorganization of the Division of Vital Statistics of the Bureau of the Census to those who are professionally interested. For approximately one-third of a century the fundamental task of the Bureau in this field was to extend the registration areas for births and deaths. With the admission of Texas to both areas in 1933, this primary responsibility was ended. The period since that time has been one of transition, in which we have sought to appraise and prepare for the new types of work for which we must now become responsible. We have realized that new tasks must be undertaken while past gains were preserved and consolidated.

In 1933, the Joint Advisory Committee of the Director of the Census took steps to explore the various questions and problems involved. Its inquiry resulted in a report to the Director on January 17, 1935. This report calls attention to the great opportunity for the development of vital statistics in this country. It asserts:

> Country-wide registration furnishes comprehensive data for the first time. While it is still necessary to work for more complete and accurate recording of the facts as to births and deaths, new and intensive effort can be devoted now to analytical treatment of the data and to the presentation of more refined results. A better statistical basis for public health work will be laid. and for all studies of population structure and changes.
>
> The United States is in about the same situation as England was in the last century when William Farr began his studies and publications, which placed his country in the position of unchallenged leadership in the public health movement.

Continuing, the report points to a number of specific "problems in vital statistics which press for solution," analyzes the qualifications of the personnel which should be entrusted with these problems, and concludes with detailed recommendations to the Director.

This report and its recommendations have been approved by the Director and the Secretary of Commerce. The reorganization now under way is the result. It is our immediate purpose to place new supervisory personnel in charge of each of three important types of functions within the Division.

Heading the Division as Chief Statistician will be Halbert L. Dunn, M.D. (University of Minn.), Ph.D. (Minnesota, in anatomy), Director of the University of Minnesota Hospitals, and Professor of Medical Statistics in the University of Minnesota Medical School. Dr. Dunn was a former director of the statistical work of the Mayo Clinic at Rochester. In addition to his general supervisory responsibilities, Dr. Dunn will have direct charge of the development of the research and analytic developments for which the report of the Advisory Committee calls. He will assume office on or before July 12, 1935.

As Assistant Chief Statistician of the Division, the Bureau has appointed John Collinson, M.D., D.P.H. (both Johns Hopkins), who has resigned his positions as Registrar of Vital Statistics for the State of Maryland and Secretary of the American Association of State Registration Executives. Dr. Collinson will be in immediate charge of the development and perfection of registration and of relations with state health officers and registration officials.

The Bureau is now negotiating for

the appointment of a Technical Assistant to the Chief Statistician for Vital Statistics who will have immediate charge of the classification and coding of causes of death, the development of the *Joint Manual*, representation of the Division respecting changes in the *International List*, and relations with medical schools and the medical profession.

The Chief Statistician will be especially assisted in the development of this program by Forrest E. Linder, Ph.D. (University of Iowa), whose scientific training and publications have been in the fields of psychophysics, biometrics, social and abnormal psychology. Dr. Linder resigned a position with the Worcester (Mass.) State Hospital to take office in the Bureau on June 1, 1935.

The Division's budget for the coming fiscal year likewise provides for the appointment of 6 field agents who will represent it in maintaining direct contacts with state officials. A districting of the United States for this purpose is contemplated. It is hoped to obtain for these posts, with the coöperation of the Civil Service Commission, well qualified young men of scientific and medical training.

These changes have permitted the assignment of the present Chief Statistician of the Division of Vital Statistics to other important functions within the Bureau of the Census. On or before July 12, 1935, Dr. T. F. Murphy will become Chief Statistician of the newly established Division of Religious Statistics, General Information and Records. In this position he will be responsible not only for the forthcoming decennial census of religious bodies, but in addition for the development of the Bureau's too-much-neglected services of information to the public, and for its public relations generally. Willard C. Smith has been promoted, at higher grade and salary, to the post of Assistant Chief Statistician of the Division of Population, where he will bear much of the burden of the projected 1935 census of population, unemployment and occupations, and of developing the Bureau's activities in the population field in anticipation of the decennial inquiry of 1940.

The foregoing changes accompany others now taking place or in prospect in various Divisions of the Bureau of the Census. They are motivated by considerations of public service, scientific progress, and merit as a guide to the selection of personnel. It is our ambition to build up the Bureau to a point where it may without challenge be regarded as the best, as it is now the largest, statistical organization in the world. The Bureau will endeavor to merit support for its program, and we eagerly hope that readers of this announcement will continue to favor us with their confidence and coöperation.

W. L. AUSTIN, *Director*

BOOKS AND REPORTS

The Frustration of Science—*By seven authors. Foreword by Frederic Soddy, F.R.S. New York: Norton,* 1935. 144 pp. Price, $2.00.

The thesis of this little volume is that the constructive possibilities of science are not being fully utilized, since we have failed to make the most of recent discoveries in many fields, while, on the other hand, the destructive possibilities are developing rapidly. Even medicine does not escape the general charge, and bacteriology, on which so much of modern medicine, surgery, and public health is based, is held as a menace through bacterial warfare, to which a chapter is devoted.

The book is distinctly pessimistic. Every thoughtful man must recognize that it contains a great deal of truth, without going as far in the gloomy outlook as the essays do. As far as medicine goes, it is pointed out that in Great Britain, Canada and the United States, there are adjustments and readjustments of the courses for medical students showing that all is not well with medical education. The reviewer believes that most of this is due to the reaching after higher and better things, rather than because so much is bad. It is perfectly true, as stated, that science and research are largely controlled by politics in spite of the many foundations, but even the best of these must indulge in some "window dressing." For example, in 1931, in Great Britain, not only were the salaries of the staff of the Medical Research Council reduced 10 per cent, but work which might have saved untold lives perished from inanition through the cutting down of funds.

Perhaps the three most injurious things given as examples are aerial warfare, bacterial warfare, and the "invention" of sterility. The surprising statement is made that science is losing its prestige in Germany, of all places.

The last paragraph in the book holds that there are only two ways to go; the road which we now seem to be following leading to Fascism, with restriction of output, lowering of the standard of life of the working classes, and a renunciation of scientific progress; while the other leads to complete socialism, which will want all the science it can get to produce the greatest possible wealth.

The book consists of 7 chapters or essays, written by as many different men, the whole being edited by Professor Frederick Soddy. The book merits attention by thoughtful people. The reviewer is not competent to express a positive opinion on the matters discussed, but cannot help hoping that the writers are unduly pessimistic. May their warning lead to further study and avoidance of the dangers.

MAZŸCK P. RAVENEL

Communicable Diseases for Nurses—*By Albert G. Bower and Edith B. Pilant (3rd ed.). Philadelphia: Saunders,* 1935. 420 pp. Price, $3.00.

This is a revised and greatly improved text which will be equally useful to nurses working in general hospitals and those employed in hospitals for communicable diseases—to nurses caring for the sick in homes and to those working in institutions. Emphasis is put in prevention as well as care of communicable disease.

The subject matter is thoroughly up-

to-date and is really interesting. Public health nurses especially will appreciate the inclusion of scabies which was left out of earlier editions. "Athlete's foot" was the only disease we looked for and could not find.

We hope the book will have a wide circulation among graduate nurses although it is designed as a textbook for student nurses.

EVA F. MACDOUGALL

Heredity and Disease—*By Otto L. Mohr. New York: Norton,* 1934. 253 pp. Price, $3.50.

This book is an outcome of a series of lectures which the distinguished Swedish geneticist gave at Harvard University in the autumn of 1933. The clarity of exposition and the sanity of the conclusions are such that the book ought to be compulsory reading for any person who is interested professionally in the genetics and constitution of the human being.

The book starts in the conventional way by an exposition of the principles of inheritance along the familiar Mendelian lines and includes a very clear account of the gene theory and the genetic experimentation. It is in the part of the book which goes on from special topics to the bearing of genetics on affairs which gives it its special character and value. Thus, the author considers the common neurologic diseases of familial type, diabetes, allergy, and the occurrence of the lethal genes in man. This term is used to indicate those abnormalities usually classed as monstrosities and abortions. Interesting as these chapters are, there is a very valuable discussion of such topics as the X-ray and mutation in which the author discusses the classic and revolutionary work of Müller showing that mutation rate can be increased by environmental events. His discussion of alcohol as a factor in human life which does not tend to create hereditary diseases of mankind demands the attention of those who glibly assume that alcoholism in an ancestor is a cause of mental disease in a descendant. His discussion of such matters as intermarriage and cross-breeding, degeneration, race-crossing, the blue blood, brings this book from a mere treatise on heredity into an important social document which clears the air of fallacy and misconception.

There has been a prevailing tendency among geneticists of the type called eugenists to build up an aristocratic ideal of life which is entirely unwarranted in so far as biology itself is concerned. That there is an aristocratic basis for human affairs is true, but it does not run parallel to the social structure as it is at present constituted. There is no exclusion of the environment in this book as a genetic factor. There should be none. The scientific day is now past when the student of genetics, in so far as it concerns human affairs, can exclude the environment in any discussion of heredity.

ABRAHAM MYERSON

The Harvey Lectures. Delivered Under the Auspices of the Harvey Society of New York, 1933–34. *Series 29. Baltimore: Williams & Wilkins,* 1935. 262 pp. Price, $4.00.

This volume contains as a frontispiece a photograph of the late Dr. Alfred Fabian Hess, President of the Society at the time of his death, followed by an appreciation of him and his work, which alone would make it valuable.

Without disparagement to the volumes which have gone before, we feel that the addresses contained in this series are of unusual interest and value. It would be invidious to pick out certain ones, and at best, a selection of this sort would depend largely on the training and individual taste of the

reviewer, since all of them are by men who are recognized as authorities in their line of work, and concern matters of great scientific interest; some of them of more direct practical interest than others.

The printing and binding of the book are excellent, as are the quite numerous illustrations. MAZYCK P. RAVENEL

Foods and the Law—*By Alexander P. Blanck, of the New York Bar. New York: Peter Smith*, 1935. 246 pp. Price, $2.50.

This manual for the business man on the laws of the United States with reference to foods and food products presents a simple and non-technical discussion of the federal requirements regarding foods and their interpretation by the courts. The material is clearly stated and should be understandable by persons desirous of information on this complex subject. About half of the book is devoted to the actual texts of the Food and Drugs Act and the rules and regulations of the Department of Agriculture for its enforcement. There is no index.

This well printed book should be of interest and value to food and drug officials and to health officers concerned with this subject, as well as to manufacturers of food products.

JAMES A. TOBEY

The Administration of Health and Physical Education—*By Jesse F. Williams and Clifford L. Brownell. Philadelphia: Saunders*, 1934. 598 pp. Price, $3.00.

The authors have succeeded in producing an excellent text in a field that has had little recent textbook emphasis.

While there are chapters on Health Service, Handicapped Children, and Health Instruction, the great bulk of the book is devoted to the sanitation of the school plant, to discussions of organization and administration, and to the facilities and equipment needed for a modern program of physical education.

The discussion of these facilities covering standards of space, number, sanitation, and supervision of gymnasiums, locker rooms, showers, swimming pools, and play fields is well done. Not for years has this material been gathered and set forth in one work.

Chapters on intramural athletics, measurements in health and physical education, the use of publicity, and on budgeting and finance, round out an excellent text.

The educational theories and ideals are kept well to the forefront. The emphasis on the building of skills and training in sports that have a health and recreational value in later life, in preference to interscholastic team games, presents the best thought of the well trained physical educator and school administrator.

This text should be part of the library, not only of all physical educators, but of school administrators, health officials, and others who may be responsible for the building, sanitation, finance, or administration of physical education plants, or for their management. CHARLES H. KEENE

Elementary Human Anatomy, Based on Laboratory Studies—*By Katharine Sibley. New York: Barnes*, 1935. 360 pp. Price, $4.50.

This text is written with the special aim of providing the student of physical education with usable material for his professional background. Therefore, although all the anatomical parts and organs of the human body are discussed, special emphasis is put on osteology, syndesmology, myology, and the nervous system.

Special diagrams of movement and for palpation of anatomical parts—particularly of joints and muscles—

supplemented by discussion of the use of human specimens in the laboratory, make this text particularly valuable for the study of kinesiology and for the physical therapist.

The illustrations, numbering 213, are excellent, the parts depicted being profusely labelled.

The discussion of the function of parts, especially of the action of muscles, is peculiarly valuable for the student of physical education.

While there are many anatomies, both unabridged and condensed, this *Elementary Human Anatomy* is a real contribution to the educational aids for the special group for whom it is designed. CHARLES H. KEENE

Fifty Years in Public Health: A Personal Narrative with Comments—*By Sir Arthur Newsholme, K.C.B., M.D., F.R.C.P. Vol. I—The Years Preceding 1909. London: George Allen & Unwin, Ltd.*, 1935. 415 pp. Price, 15 s. net.

This first volume of Sir Arthur's memoirs published in England covers a period in the history of public health and preventive medicine during which phenomenal progress was made. The reader sees these events through very discerning eyes and he may be reminded as he reads of the observation of Dr. William H. Welch that the best approach to the understanding of any subject is the historical.

Such a personal narrative holds certain advantages for the reader, particularly for those who have learned to admire the stimulating and incisive mental approach which has characterized Sir Arthur's written and spoken words these many years. Any medical man whose life has brought contacts with such outstanding figures as John Simon, Edwin Chadwick, William Farr, and Max von Pettenkofer, will have an interesting story, and these circumstances are all the more significant when the narrator is one who can appreciate the historical significance of these contributions and relate them closely with present-day affairs. One sees our current efforts in tuberculosis control, for example, in a new light in reading the debate on notification of the disease which occurred in England a full decade before it was an acute problem in America. There are many similar subjects which passed through phases of discussion in England before they came into the foreground here, and one familiar with this progress of thought can sometimes speak prophetically with justifiable confidence.

Such a personal narrative affords the opportunity for the author to relate many circumstances of life in England in the 1860's and 1870's which are of importance to public health, though much more evidently so in the light of such an interpreter. There were cultural and religious habits which bore heavily on hygiene when viewed in the long perspective, and one who understands the educational methods of those days can the more readily appreciate the advantages of our own time.

Chapters devoted to the decline of typhoid fever, to infant and child welfare, to housing and poverty, to the continuing struggle against tuberculosis, to vital statistics, and to public medical service, reflect the various fields of interest in which Sir Arthur has been distinguished. His skillful style serves to bring to the reader the important facts in these matters with a minimum of effort. For background purposes the volume can be highly recommended to students of the public health. How significant and hopeful it would be if all physicians might be aware of the development of their science in England! We might more easily achieve a new degree of social mindedness in things medical.

American readers will look forward eagerly to the coming publication of

the second volume in this series, which will review the experience of the years after 1909, during which the author's services to America were even greater than in the earlier period.

REGINALD M. ATWATER

Drugs **Against Men**—*By Henry Smith Williams, M.D. New York: McBride,* 1935. 184 pp. Price, $1.75.

This book by a well known scientist gives a large amount of information on the various drugs which are considered injurious to mankind when taken in excess, and which are not necessary to the well-being of the normal person. Some of them, morphine for example, we recognize as indispensable for medicinal use.

The author considers that as a generation we are weaklings, needing drugs to give us the illusion of stability. The book is written for the large class of individuals who are of such unstable, nervous organization as to lack will power to resist the allurement of drugs, among which he includes caffein, alcohol, the narcotics, the bromides, chloral, aspirin, veronal, and other such products—all " props " for the unstable nervous system.

There can be little question of the correctness of the statements which he makes, but we believe he has gone to unnecessary length in emphasizing some of them. The advice which he gives for abstention from practically all of these is sound, and we feel that the race would be just as well off if his advice were followed to a considerable extent, though we cannot go as far as calling the person who drinks one cup of coffee per day at breakfast a caffein addict.

Each chapter ends in a summary which gives conclusions and a preachment, printed in italics. All doctors will agree with the author that the administration of the Narcotic Act should be changed and that medical men should not be restricted by rules made by laymen and enforced by laymen, who in too many cases are political heelers. The author dwells on what he calls the " Los Angeles Reign of Terror." As he says, " it could have happened nowhere else except in America and would not have been tolerated for an hour in any other country of the world, ancient or modern." He followed the court trials in Los Angeles in person. He gives the facts about what he calls " The Billion Dollar Racket." He tells how the Los Angeles Medical Association in December, 1934, threw down the gage to the organized forces of the " dope " racket, and feels that organized medicine must come to the rescue.

We would like to quote at greater length from this book, which we believe will do good, in spite of the opinion that the author is somewhat extreme in his deductions. MAZŸCK P. RAVENEL

Maternal Mortality in Philadelphia —Report of Committee on Maternal Welfare—*Philadelphia County Medical Society,* 1934. 143 pp. Price, $1.00.

As in the case of the New York report which appeared in 1933 and was reviewed in these columns, this report from Philadelphia represents a sincere attempt to add something to our knowledge of the causes and prevention of maternal mortality, and to improve conditions in the city in which the study was made. It deals with 717 deaths occurring in Philadelphia in 1931–1933. The death certificates were studied and the information so obtained was supplemented by visits to hospitals and physicians, midwives, and families. The data were reviewed by an Analysis Committee.

Space forbids going into many details of this study; the best one can do is to touch on a few significant points with a recommendation to the

reader to go over the whole valuable report for himself.

At the outset a good impression is created by the report's fair discussion of the maternal mortality rate of the United States as compared with the rates of other countries. Much time and space have been wasted on occasion in trying to compare rates which are not fairly comparable—and in propaganda based on such futile comparisons.

There is an interesting and provocative statement of the criteria used by the committee in determining whether to classify a death as preventable or non-preventable and upon whom to lay the responsibility. They frankly state that they have erred, probably, in placing too many deaths at the door of the physician. If this is so, while the motive was good the result may be unfortunate. There is no dearth now of loose talk in newspapers and magazines, exaggerating the responsibility of the medical profession for the maternal mortality; it would serve no good purpose to add to it.

The Analysis Committee in making up its rates and deciding concerning the preventability of death in a given case frequently changed the diagnosis from that given on the death certificate to one which seemed to them to be more in acordance with the facts. For example, 31 of the cesarean certificates were considered to be incorrect, and 22 of them were changed to septic infection. This sort of post-factum decision probably adds considerably to the accuracy of the whole study in the hands of a conscientious and able committee such as this one, but at the same time has its perils.

One finding of the committee emphasizes what a number of commentators have been insisting for some time, namely, that the importance of septic abortion as a factor in maternal mortality has not yet received sufficiently widespread recognition. This cause was responsible for more than one-fifth of the deaths in the Philadelphia series. Nearly 63 per cent of these were cases of illegal abortion. It is pointed out that if these could have been eliminated there would have been 14 per cent fewer deaths. It is one thing, however, to recognize this needless waste of life, and quite another to do anything effective about it. Neither public education nor the thunders of the Church affect it greatly, it would seem. And speaking of the Church, the committee regarded as non-preventable deaths those due to refusal of a necessary operation on religious grounds. Such deaths are understandable, but can one call them justly non-preventable.

The committee's "Recommendations and Discussion" at the end of the report are definite and frank. Most of them beyond doubt are sound. Nevertheless, one statement appearing here, and a fundamental one at that, seems to the reviewer not to be based on sufficient evidence. It is: "The responsibility for the high maternal mortality in Philadelphia rests primarily with the medical profession, hence the problem of reducing it belongs to the physicians." Such a statement implies that we now have a clear understanding of all the factors entering into the problem of maternal mortality—in Philadelphia or any other community. This certainly seems not to be the case; and every study made only emphasizes the fact that there must be missing or unappreciated factors. Otherwise, how explain the practically undiminished mortality in the face of increasing improvement in medical, nursing, and hospital care, and in public education. A greater effort to evaluate such things as the racial factor or the more or less intangible effect of modern civilized life on the function of childbearing might furnish a lead. Still another need is more studies of control groups—women

delivered under unfavorable conditions and without adequate prenatal care who do *not* die. It begins to look as if the usual type of statistical study cannot be depended upon to clear up the still elusive puzzle of a relatively stationary maternal mortality.

MERRILL E. CHAMPION

Health Education in Senior High Schools—*By Dorothy Ruef. New York: Teacher's College,* 1934. 106 pp. Price, $1.50.

After 25 years of the modern trend away from physiology toward education for health, educators are entering on that phase that always appears in any enduring effort—the investigation of procedures and results.

This text is a study of personnel, organization, activities, relationships, and qualifications of staffs in this field of education in New Jersey. It concludes with a summary and recommendations for: a state program of health education for high schools; definite organization of the program fixing responsibility; better training of the specialists and teachers in health education; state certification not only for teachers, but for physicians, nurses, and dentists, with better training for these and placing them on a full-time basis; and an improvement of relationships—closer help and instruction—between the state department of education and the teachers in the field and a better coördination of the health education program within individual schools.

CHARLES H. KEENE

BOOKS RECEIVED

METHODS AND MATERIALS OF HEALTH EDUCATION. By Jesse Feiring Williams and Fannie B. Shaw. New York: Nelson, 1935. 331 pp. Price, $1.65

A SQUARE DEAL FOR THE NARCOTIC ADDICT. By William H. Ladue. Plattsburgh: the Author, 1935. 131 pp. Price, $1.00.

THE SUBNORMAL MIND. By Cyril Burt. New York: Oxford, 1935. 368 pp. Price, $3.75.

OSLER'S PRINCIPLES AND PRACTICE OF MEDICINE. Revised by Thomas McCrae. 12th ed. New York: Appleton, 1935. 1196 pp. Price, $8.50.

CHILD NUTRITION ON A LOW-PRICED DIET. By Mary Swartz Rose and Gertrude M. Borgeson. New York: Teachers College, 1935. 109 pp. Price, Paper, $1.00, Cloth, $1.50.

HOW LIFE BEGINS. By George L. Bird. Chicago: Book House for Children, 1935. 117 pp. Price, $1.00.

TROPICAL MEDICINE. By Leonard Rogers and John W. D. Megaw. 2d ed. London: Churchill, 1935. 547 pp. Price, $5.00.

HOSPITAL ACCOUNTING AND STATISTICS. A Manual for American Hospitals. By Michael M. Davis, *et al.* Chicago: American Hospital Association, 1935. 85 pp. Price, $1.00.

NEW AND SUPPLEMENTARY FACTS AND FIGURES ABOUT TUBERCULOSIS. Compiled by Jessamine S. Whitney. New York: National Tuberculosis Association, 1935. 46 pp. Price, $.50.

1000 QUESTIONS AND ANSWERS ON T. B. Edited by Fred H. Haise. New York: *Journal of the Outdoor Life,* 1935. 232 pp. Price, $.75.

A RECORD BOOK FOR TUBERCULOSIS PATIENTS. By Lawrason Brown. New York: *Journal of the Outdoor Life,* 1935. Price, $.15.

MAKING THINGS HAPPEN IN THE CHRISTMAS SEAL SALE. A Publicity Manual. By Dwight Anderson. New York: National Tuberculosis Association, 1935. 53 pp. Available through State Tuberculosis Associations.

NUTRITION WORK WITH CHILDREN. A Revised and Enlarged Edition. By Lydia J. Roberts. Chicago: University of Chicago Press, 1935. 639 pp. Price, $4.00.

A NEW DEAL IN LIQUOR. A Plea for Dilution. New York: Doubleday, 1935. 239 pp. Price, $2.00.

A SELECTED PUBLIC HEALTH BIBLIOGRAPHY WITH ANNOTATIONS

RAYMOND S. PATTERSON, PH.D.

A Check on Prevention—Reduction in diphtheria mortality in the large cities seems to be petering out. Only 40 fewer deaths occurred in 1934 than in 1933. New England and the West South Central States gave the best records. Diphtheria still shows itself amenable to control measures.

ANON. Diphtheria Mortality in Large Cities of the United States in 1934. J.A.M.A. 104, 24:2182 (June 15), 1935.

Nurse-Midwifery in England—Comments upon a recent report on the midwife situation in England by Dame Janet Campbell, recommending fewer schools and midwives, better training, and that all midwives have nurse's training as a foundation.

ANON. Maternity Service in England. Canad. Nurse, 31, 5:209 (May), 1935.

Another Public Health Yardstick—Although the same number of people died of typhoid fever in 1934 as did in 1933, there are encouraging signs of a basically improved situation. An honor roll of cities with no deaths is published, three of which have had no fatalities for 4 consecutive years. An enviable record.

ANON. Typhoid in the Large Cities of the United States in 1934. J.A.M.A. 104, 23: 2093 (June 8), 1935.

Convulsions in Infancy—In babies that showed history of convulsions, acute infections were the most common cause, accounting for 30 per cent of the number studied. Pneumonia, acute upper respiratory disorders, and sepsis were the most common offenders of this group. Acute central nervous system diseases followed (meningitis being largely responsible), then infantile tetany, cerebral deficiency, cerebral birth injury, and acute nutritional disturbances. These groups are further analyzed according to age.

BROWN, J. E. Convulsions in Infancy. Ohio State M. J. 41, 6:423 (June), 1935.

Public Health Nursing in the West—Completion of a public health nursing survey in San Francisco by the public health nursing committee of the Health Council of the Community Chest led to the recommendations: (1) that a permanent committee be established within the Health Council to correlate nursing services; and (2) that the committee direct a demonstration in public health nursing under centralized direction in a selected area.

CRAIGHAN, L. A. Survey of Public Health Nursing in San Francisco. Pacific Coast J. Nurs. 31, 5:254 (May), 1935.

Laboratory Tests for Syphilis Compared—Serum specimens from a large number of syphilitic patients and non-syphilitics were sent to 13 serologists. The study reveals the relatively equal value of complement fixation and some of the more satisfactory flocculation tests.

CUMMING, H. S., *et al.* The Evaluation of Serodiagnostic Tests for Syphilis in the United States. J.A.M.A. 104, 23:2083 (June 8), 1935.

What to Tell about Health—The author who listed 23 health "beliefs" to be unlearned now discusses what can be told in health education. In addition to nutrition, exercise and rest, he includes mental hygiene, poisons, parasites, accidents, and organ mal-

function, and shows that there is still plenty to be taught.

FORSYTHE, W. E. Things to Emphasize in Personal Health Teaching. J. Health & Phys. Ed. 6, 5:14 (May), 1935.

Breast Feeding vs. the Bottle—Among 20,000 babies whose records were surveyed, a definite rise in morbidity after 6 months was found in the artificially-fed infants, not shared by breast-fed children. Mortality in breast-fed babies was almost entirely in the first two months.

GRULEE, C. G., *et al.* Breast and Artificially-Fed Infants. J.A.M.A. 104, 22:1986 (June 1), 1935.

Your Best Friend Tells You—Odor given to the breath by onions comes from the oil which does not reach the breath from the stomach but solely from particles retained in the mouth. These particles cannot be removed by ordinary brushing, but the breath can be completely rid of odor by cleaning the teeth and tongue and rinsing the mouth with a solution of chloramine. It is probable that foul breath from other causes would be amenable to the same treatment.

HAGGARD, H. W., and GREENBURG, L. A. Breath Odors from Alliaceous Substances. J.A.M.A. 104, 24:2160 (June 15), 1935.

Nursing in California's Health Insurance—Nursing care in hospitals through staff service and in the home through use of the established visiting nurse services is foreseen.

ISSLER, A. R. Pacific Coast J. Nurs. 31, 6:299 (June), 1935.

Epidemiology of Typhoid—Extraordinary difficulties encountered in the epidemiologic investigation of an extensive typhoid fever outbreak in a circus troupe make an absorbing story. Though the vector of infection could not be traced, much-needed sanitary safeguards were effected.

MILLER, K. E., and MILLER, H. E. A Report on an Epidemic of Typhoid Fever in a Circus. Pub. Health Rep. 50, 23:778 (June 7), 1935.

School and Community—A whole issue of the magazine is given over to a consideration of the ways in which schools are seeking to discover needs of the community, and of the necessity to interpret school and community to each other. Health workers will be interested in the consideration given to methods which schools should employ to work more effectively with all community agencies—public, semi-private, and private.

MOEHLMAN, A. B., *et al.* Symposium on School and the Community. Educational Method, 14, 8:403 (May), 1935

The Church in Social Hygiene—The rôle is discussed by a number of authors in the light of rural and urban situations, and from the viewpoint of many different denominations, this issue of the magazine being the "Church Number."

SPENCER, A. G., *et al.* The Church, Social Relations and Family Welfare. J. Social Hyg. 21, 5:205 (May), 1935.

Depression Effects on Social Life—Following the custom of analyzing the social changes of the preceding year, the editors present a series of useful papers on the effect of the depression on social life and conditions today.

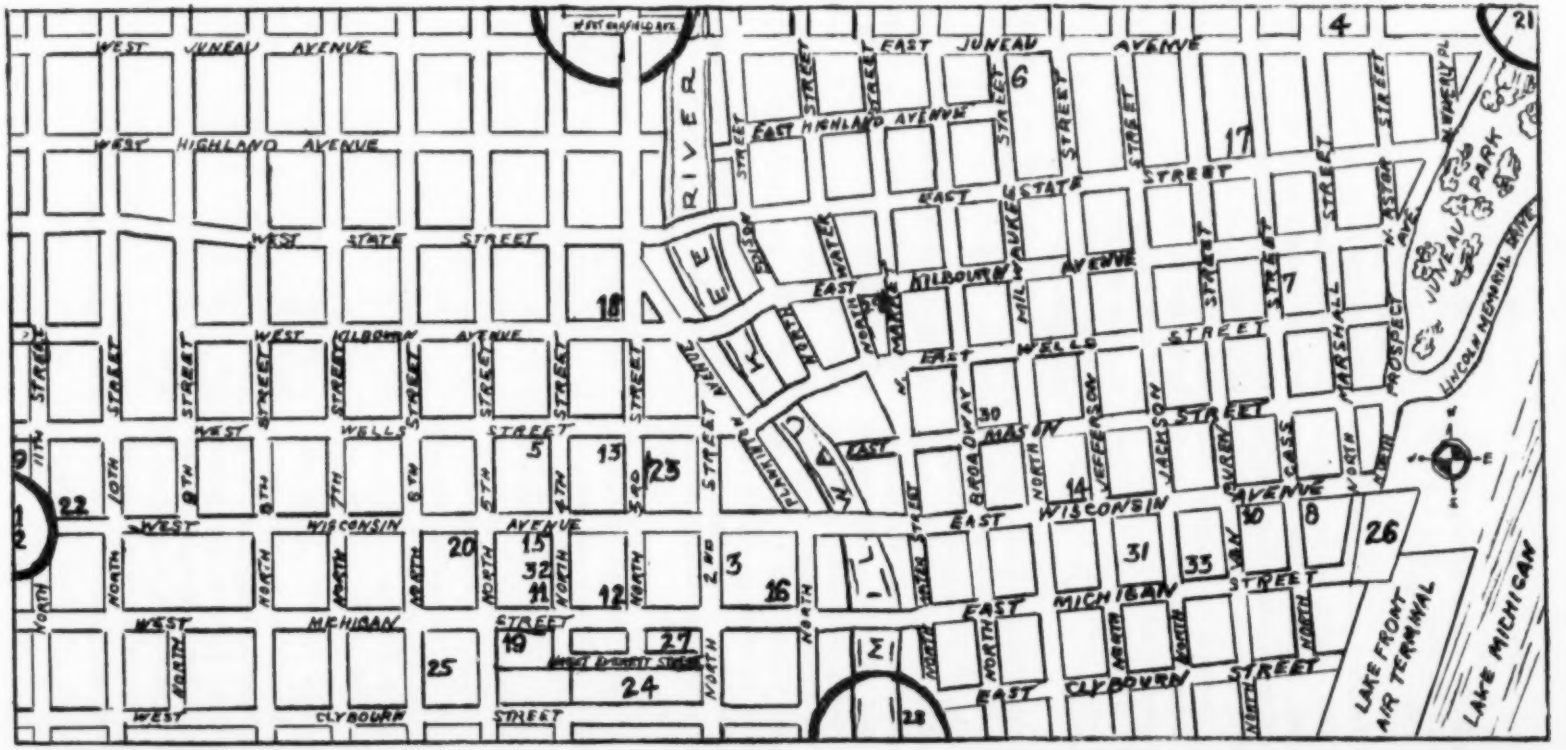
THOMPSON, W. S., *et al.* Symposium on Changes of the Last Year Due to the Depression. Am. J. Sociology, 40, 6:713 (May), 1935.

Making Sewage Inoffensive—Advantages of chemical methods over the biological means of sewage treatment are set forth in this article which describes a number of modern installations.

ZACK, S. I. Chemical-Mechanical Treatment of Sewage. Municipal Sanitation, 6, 6:172 (June), 1935.

CITY OF MILWAUKEE

A.P.H.A. Sixty-Fourth Annual Meeting, October 7–10, 1935. Headquarters, Hotel Schroeder



Hotels

1. Abbot Crest
2. Ambassador
3. Antlers
4. Astor
5. Belmont
6. Carlton
7. Colonial
8. Globe
9. LaSalle
10. Martin
11. Maryland
12. Medford
13. Miller
14. New Pfister
15. New Randolph
16. Plankinton
17. Plaza
18. Republican
19. Royal
20. Schroeder
21. Shorecrest
22. Tower
23. Wisconsin

Miscellaneous

24. Union Station
25. Chicago, North Shore, and Milwaukee Depot
26. Chicago and North Western Railway Depot
27. Chicago and Northwestern Stages, and Milwaukee Electric Lines
28. Great Lakes Transit Corporation
29. City Hall
30. Milwaukee Athletic Club
31. Post Office
32. Y.M.C.A.
33. Y.W.C.A.

ASSOCIATION NEWS

Nominations for the Governing Council

IN accordance with the By-laws of the Association, the Nominating Committee reports the following nominations for the Governing Council. The Constitution provides that "upon the petition of twenty-five Fellows, the Nominating Committee shall add the name of any Fellow to this list, providing such petition is received 15 days before the Annual Meeting."

The ten Fellows receiving the highest number of votes on a written ballot cast by the Fellows present and voting at the Annual Meeting in Milwaukee will be elected for the three-year term, 1935–1938.

Alice C. Bagley, R.N.,
900 Stockton Street,
San Francisco, Calif.

J. N. Baker, M.D.,
State Board of Health,
Montgomery, Ala.

M. E. Barnes, M.D.,
State University of Iowa,
Iowa City, Ia.

W. W. Bauer, M.D.,
American Medical Association,
535 N. Dearborn Street,
Chicago, Ill.

E. L. Bishop, M.D.,
Tennessee Valley Authority,
Knoxville, Tenn.

F. C. Blanck, Ph.D.,
Bureau of Chemistry and Soils,
Washington, D. C.

Earnest Boyce,
Chief Engineer, Division of Sanitation,
State Board of Health,
Lawrence, Kans.

W. F. Cogswell, M.D.,
Dept. of Public Health,
Helena, Mont.

Selwyn D. Collins, Ph.D.,
U. S. Public Health Service,
Washington, D. C.

R. D. Defries, M.D.,
5 Cluny Drive,
Toronto, Ont, Canada.

W. Thurber Fales, Sc.D.,
Director, Bureau of Vital Statistics,
City Health Department,
Baltimore, Md.

John A. Ferrell, M.D.,
Rockefeller Foundation,
49 W. 49th Street,
New York, N. Y.

Elizabeth G. Fox, R.N.,
35 Elm Street,
New Haven, Conn.

Amelia Grant, R.N.,
Department of Health,
New York, N. Y.

Paul Hansen,
Consulting Engineer,
6 N. Michigan Avenue,
Chicago, Ill.

Victor G. Heiser, M.D.,
Metropolitan Tower,
Leonard Wood Memorial for Eradication of Leprosy,
New York, N. Y.

C. A. Holmquist,
Director, Division of Sanitation,
New York State Dept. of Health,
Albany, N. Y.

H. E. Kleinschmidt, M.D.,
National Tuberculosis Association,
50 West 50th St.,
New York, N. Y.

J. H. Mason Knox, M.D.,
2411 N. Charles Street,
Baltimore, Md.

A. Lessard, M.D.,
129 Ave des Erables,
Quebec, Que., Canada.

Kenneth F. Maxcy, M.D., Dr.P.H.,
P. O. Box 701,
University, Va.

J. F. Norton, Ph.D.,
Upjohn Company,
Kalamazoo, Mich.

W. B. Palmer,
Milk Inspection Association of the Oranges,
Orange, N. J.

M. P. Ravenel, M.D.,
University of Missouri,
Columbia, Mo.

C. O. Sappington, M.D.,
330 S. Wells Street,
Chicago, Ill.

William A. Sawyer, M.D.
343 State Street,
Rochester, N. Y.

R. R. Sayers, M.D.,
U. S. Public Health Service,
Washington, D. C.

Estella F. Warner, M.D.,
U. S. Public Health Service,
Washington, D. C.

C. F. Wilinsky, M.D.,
330 Brookline Avenue,
Boston, Mass.

Abel Wolman,
2411 N. Charles Street,
Baltimore, Md.

NEW OFFICERS WESTERN BRANCH A.P.H.A.

THE following officers were elected at the 6th Annual Meeting of the Western Branch, in Helena, Mont., July 3, 1935:

President—W. F. Cogswell, M.D., Helena, Mont.

President-Elect—H. E. Young, M.D., Victoria, B. C., Canada

Vice-Presidents—J. D. Dunshee, M.D., Sacramento, Calif.; J. L. Jones, M.D., Salt Lake City, Utah; and W. H. Kellogg, M.D., Berkeley, Calif.

Secretary—W. P. Shepard, M.D., San Francisco, Calif.

Treasurer—William Ford Higby, San Francisco, Calif.

Regional Board—Guy S. Millberry, D.D.S., San Francisco, Calif.; George C. Truman, M.D., Phoenix, Ariz.; Carl E. Green, Portland, Ore.; Fred Stimpert, Helena, Mont.; Ernestine Schwab, San Francisco, Calif.; John J. Sippy, M.D., Stockton, Calif., to serve the unexpired term on the Regional Board of Dr. Jones, who as a vice-president is automatically a member of the Board. This term expires in 1936.

Chairman of Executive Committee—Fred Stimpert, Helena, Mont.

The 1936 meeting will be held in Vancouver, B. C.

APPLICANTS FOR MEMBERSHIP

The following individuals have applied for membership in the Association. They have requested affiliation with the sections indicated.

Health Officers Section

Robert W. Ball, M.D., P. O. Box 213, Columbia, S. C., Richland County Health Director

Edgar Bieber, M.D., 501 Deer St., Dunkirk, N. Y., City Health Officer

Pedro de la Camara, M.D., Centro Secundario de Higiene Rural, Arevalo, Avila, Spain, Health Officer

W. Taylor Chamberlin, M.D., 359 Fulton Ave., Hempstead, L. I., N. Y., Health Officer

Paul L. Eisele, M.D., Ripon, Wis., Health Officer

J. W. Erwin, M.D., Savannah, Tenn., Health Officer

Roscoe Faulkner, M.D., Trenton, Tenn., Assistant Director, Gibson County Health Department

J. W. Frost, M.D., Box 245, Waverly, Tenn., Director, Humphreys County Health Department

Robert K. Harker, M.D., Bridgeport, Calif., Mono County Health Officer

Austin E. Hill, M.D., Dallas County Health Dept., Dallas, Tex., Assistant County Health Officer

Charles E. Kaufman, M.D., 328 Main St., West Haven, Conn., Health Officer of West Haven

Lester B. Lougee, M.D., Marilla, N. Y., Health Officer of Marilla and Elena

Will J. Martin, M.D., Kokomo Clinic, Kokomo, Ind., City Health Commissioner

Sumner M. Miller, M.D., 800 Peoria Life Bldg., Peoria, Ill., Commissioner of Health

Wilbur J. Moore, M.D., Cheshire, Conn., Health Officer

Edwin L. Sheahan, M.D., St. Louis County Hospital, Clayton, Mo., Deputy State Health Commissioner

John U. Speer, M.D., Pulaski, Tenn., Director, Giles County Health Unit

Harry G. Timbres, M.D., Box 45, Reedsville, W. Va., Physician, Arthurdale Homestead Subsistence Project

Arthur J. Wiesender, M.D., 736 Spring St., Berlin, Wis., City Health Commissioner

A. Evan Williams, M.D., Boyceville, Wis., Health Officer

Laboratory Section

Claude S. Bryan, M.S., Michigan State College, East Lansing, Mich., Research Worker, Bacteriology Department

Mary E. Caldwell, Ph.D., Box 4051, Tucson, Ariz., Head of Dept. of Bacteriology, University of Arizona

Marion S. Campbell, 29 N. Hawthorne Lane, Indianapolis, Ind., Senior Bacteriologist and Assistant Chemist, State Division of Public Health

John Grill, M.D., 561 N. 15 St., Milwaukee, Wis., Director of Laboratories, Milwaukee County Institutions

Lewis R. Hill, M.D., 500 Sunset Ave., La Grange, Ill., Assistant Professor of Bacteriology and Preventive Medicine, Loyola Univ. College of Medicine; Pathologist

Dorcas O. Hoge, A.B., 512 W. Second St., Grand Island, Nebr., City Bacteriologist

Elizabeth D. Robinson, 1179 Main St., Hartford, Conn., Senior Laboratory Technician, State Dept. of Health Laboratories

Helen C. Sayles, B.A., Dept of Health, New Britain, Conn., Bacteriologist

Thomas F. Walker, Great Falls, Mont., Director of Laboratory

Vital Statistics Section

Alexander Fell, Tenafly, N. J., Secretary and Registrar of Vital Statistics, Board of Health

Louise Hopwood, B.S., 615 Dunkirk Rd., Baltimore, Md., Statistical Worker, U. S. Public Health Service

Sara Kerr, B.A., 126 Pearl St., Buffalo, N. Y., Consultant in Statistical Work, City Dept. of Health

Frederick F. Stephan, M.A., 722 Woodward Bldg., Washington, D. C., Secretary, American Statistical Association

Lida J. Usilton, M.A., 1613 Harvard St., N.W., Washington, D. C., Associate Statistician, U. S. Public Health Service

Jane Worcester, A.B., 55 Shattuck St., Boston, Mass., Statistician, Harvard School of Public Health

Public Health Engineering Section

John F. O'Donnell, 4007 Holmes, Kansas City, Mo., Farm Dairy Inspector, Health Department

Food and Nutrition Section

Reid R. Ashworth, D.V.S., 3533 Hertford Place, N.W., Washington, D. C., Chief Food Inspector, Dept. of Health

Jacob W. Forbes, State Board of Health, Helena, Mont., Director, Food and Drug Division, State Board of Health

Lloyd B. Jensen, Swift & Co., Chicago, Ill., Chief Bacteriologist, Research Laboratories

C. J. Pollock, 1301 Moreau Drive, Jefferson City, Mo., City Dairy Inspector

Child Hygiene Section

Fairfax Hall, M.D., 421 Huguenot St., New Rochelle, N. Y., New York State Medical Society Committee Public Health and Medical Education

Arie M. Wetzel, R.N., 210 Chestnut St., Marietta, Ohio, Washington County Public Health Nurse

Robert G. White, M.D., Ann Arbor Public Schools, Ann Arbor, Mich., School Physician

Charles C. Wilson, M.D., 249 High St., Hartford, Conn., Director of Physical and Health Education, Board of Education

Public Health Education Section

William J. Burns, 4421 Woodward Ave., Detroit, Mich., Executive Secretary, Wayne County Medical Society

William H. Frazier, M.D., Tuskegee Institute, Ala., Medical Examiner, Negro Public Schools

Violet S. Hoar, R.N., 353 W. 17 St., Holland, Mich., Health Counselor, Allegan County Health Unit

Edward W. Zukauckas, M.D, 1114 Foster Ave., Brooklyn, N. Y., Medical Inspector, New York City Dept. of Health

Public Health Nursing Section

Florence W. Englesby, R.N., 800 Capitol Ave., Pierre, S. D., State Supervisor, Child Health Nursing Project

Betty Jones, R.N., Savannah, Tenn., Hardin County Health Nurse

Gladys McGuire, 822–6 Ave. N., Great Falls, Mont., County Tuberculosis Nurse

Lily Morris, 2912–3rd Ave. N., Great Falls, Mont., Supervisor of School Nursing

Stella I. Mucha, R.N., 134½ S. Barry St., Olean, N. Y., Supervising Nurse

Ann S. Nyquist, R.N., University of Minnesota, Minneapolis, Minn., Field Nurse, Division of Child Hygiene

Mary M. Ownby, R.N., Box 174, Waverly, Tenn., Humphreys County Public Health Nurse

Epidemiology Section

Ralph K. Collins, M.D., Direction Generale de la Sante Publique, Sofia, Bulgaria, Field Director, Rockefeller Foundation

B. A. Dyar, M.D., State Board of Health, Pierre, S. D., Epidemiologist

Joseph C. Knox, M.D., M.P.H., State Board of Health, Raleigh, N. C., Epidemiologist

Earl B. McKinley, School of Medicine, George Washington University, 1335 H. St., N.W., Washington, D. C., Dean and Professor of Bacteriology, Hygiene and Preventive Medicine

Dr. Carlos Monge, Calle Trinidad 373, Lima, Peru, Head Dept. of Medicine, Military Hospital

Hugh F. Stanton, M.D., C.P.H., State Board of Health, Phoenix, Ariz., Epidemiologist

Franklin H. Top, M.D., C.P.H., Herman Kiefer Hospital, Detroit, Mich., Medical Epidemiologist

Thomas B. Turner, Rockefeller Institute, New York, N. Y., Special Member, International Health Division, Rockefeller Foundation

Unaffiliated

Frederic W. Nordsiek, S.B., 386 Fourth Ave., New York, N. Y., Executive Secretary, New York Diebetes Assn.

Joseph Stein, Room 1111, 330 W. 42 St., New York, N. Y.

ERRATUM

ON page 713 of the June issue of the *Journal* (Recommended Procedure for Diphtheria Immunization), the first word on the 29th line in the first column should be *years,* not months, the phrase thus reading, "The toxin-antitoxin mixture less often causes reactions in children over 6 years of age, and in adults, than do the soluble and alum precipitated toxoid preparations, . . ." H. E.

NEWS FROM THE FIELD

AWARD TO DR. CHESLEY

DURING the Conference of State and Provincial Health Authorities of North America held in Atlantic City, N. J., June 14–15, A. J. Chesley, M.D., F.A.P.H.A., of Minnesota, was presented with a certificate of award as State Health Officer of the state which had done the most to further the promotion of the Health Conservation Contests. The presentation address was made by Watson S. Rankin, M.D., F.A.P.H.A., Chairman of the Grading Committee of the Health Conservation Contest, on behalf of the Chamber of Commerce of the United States and the American Public Health Association.

At the time this award was announced by the Grading Committee special recognition was also made of the splendid interest being stimulated in the Health Conservation Contest by the New York State Department of Health. The success of these competitions is in no small measure due to the coöperation of state health officers all over the United States.

DES MOINES SURVEY

A BRIEF survey in regard to public health activities and organized care of the sick in Des Moines, Ia., was made recently by James Wallace, M.D., F.A.P.H.A., Associate Field Director of the American Public Health Association for the Community Chests and Councils, Inc.

BABIES HONOR DR. THOMPSON AT 100

MANY of the 1,800 babies he brought into the world during 75 years of practice thronged Main Street in Bethel, Ohio, on July 6, to celebrate Dr. William Eberle Thompson's 100th birthday. The town weekly printed a special issue. The Ohio State Medical Association sent its president, Dr. John A. Caldwell of Cincinnati, to pay the respects of the profession.

Casting aside the honors, Dr. Thompson almost shyly called himself just an old-fashioned country doctor.—*New York Herald-Tribune*, July 8, 1935.

NORTHERN CALIFORNIA PUBLIC HEALTH ASSOCIATION ELECTS OFFICERS

AT its annual meeting in March, the Northern California Public Health Association elected the following officers:

President—Dr. J. C. Geiger, San Francisco
President-Elect—Dr. E. H. Coleman, Fresno
Vice-President—Samuel H. Greene, San Francisco
Secretary—Dr. I. O. Church, Oakland
Treasurer—Helen Hartley, Stockton
Representative on the Governing Council of the A.P.H.A.—Leon B. Reynolds, Stanford University

ROTHSCHILD GIFT

ONE of her last acts of philanthropy before the Baroness Edmond de Rothschild died recently was the contribution of $7,500 to Hadassah, the Women's Zionist Organization of America, to repair the Hadassah Hospital in Safad, Palestine.

The property of the hospital building was given to Hadassah by the late Baron de Rothschild shortly after the World War and is the only hospital for tuberculous patients in Palestine. In the last few years the condition of the building had become so bad that the hospital would shortly have had to be condemned as unsafe. Extensive

repairs are now possible. It will have a bed capacity of 55.

ROOSEVELT MEDAL AWARDED

WILLIAM HALLOCK PARK, M.D., F.A.P.H.A., Director of the Bureau of Laboratories of the New York City Health Department, will receive the Roosevelt Medal for the year 1935. Dr. Park receives the medal for distinguished service in the administration of public office.

The medal will be bestowed by the President of the Roosevelt Memorial Association as usual at a banquet at Roosevelt House, the Roosevelt birthplace, at 28 East 20th Street, New York, on October 27, the 77th anniversary of Theodore Roosevelt's birth.

The Roosevelt Awards, which were establish by the Roosevelt Memorial Association in 1923, are annually given in certain fields associated with Theodore Roosevelt's career: public and international law; industrial peace; science; American historical literature; outdoor life; national defense; international affairs; administration of public office; conservation of natural resources; advancement of social justice; expression of the pioneer virtues; leadership of youth and the development of American character.

STATE AND PROVINCIAL AUTHORITIES

THE following officers were elected at the Atlantic City meeting of the Conference of State and Provincial Health Authorities of North America on June 15:

President—Dr. H. E. Young, Provincial Officer of Health of British Columbia.

Vice-President—Dr. Earle G. Brown, Secretary of the State Board of Health of Kansas.

PERSONALS

DR. GREGORY D. MAHAR, of the staff of the Syracuse Department of Health since 1923, was appointed Health Commissioner of Syracuse, succeeding Dr. George C. Ruhland, who recently became Health Commissioner of the District of Columbia.

DR. ELMER G. BALSAM, of Billings, Mont., is the new President of the Montana State Board of Health, and Dr. Louis H. Fligman, of Helena, is Vice-President.

DR. NATHANIEL W. FAXON recently resigned as Superintendent of Strong Memorial Hospital, of Rochester, N. Y., to become Superintendent of Massachusetts General Hospital, succeeding the late Dr. George H. Bigelow.

FRANCIS E. FRONCZAK, M.D., F. A.P.H.A., was honored at a reception recently on his completion of 25 years as Health Commissioner of Buffalo, N. Y.

DR. GEORGE M. ANDERSON, of Cheyenne, has been appointed to the offices of Wyoming State Health Officer, Secretary of the State Board of Health, and Acting Secretary of the State Board of Medical Examiners, succeeding Dr. Walter H. Hassed, member A.P.H.A. Dr. Anderson held the position prior to Dr. Hassed's appointment in 1928.

GAIUS E. HARMON, M.D., of Cleveland, O., F.A.P.H.A., has resigned as Associate Professor of Hygiene and Vital Statistics at Western Reserve University, to become Chief of the Bureau of Epidemiology of the Chicago Board of Health.

C. C. SLEMONS, M.D., F.A.P.H.A., who has served under 3 governors as State Health Commissioner of Michigan, was reappointed June 26. His term would have expired July 1. Dr. Slemons was City Health Officer in Grand Rapids before he was appointed State Health Commissioner.

DR. CHARLES M. SIEVER, for 19 years head of the Student Health Department at Kansas State College, Manhattan, Kans., resigned as of August

31. Dr. Siever was formerly Health Officer of Jackson County.

DR. EDWARD J. SCHWARTZ has resigned as Assistant Health Officer of the District of Columbia.

DR. HERBERT SPENCER GASSER, Professor of Physiology and Director of the Physiological Laboratories of Cornell University Medical College, has been appointed Director of the Rockefeller Institute for Medical Research, succeeding Dr. Simon Flexner, who is retiring.

DR. RALPH S. MUCKENFUSS, Bacteriologist at Washington University, St. Louis, Mo., until July 1, has become temporary Associate Director of the New York Bureau of Laboratories. From 1925 to 1929 he was connected with Rockefeller Institute.

I. F. THOMPSON, M.D., F.A.P.H.A., Commissioner of Health of Racine, Wis., has been reappointed for another term of four years beginning Oct. 1, 1935.

DEATHS

DR. THOMAS MCCRAE, Professor of Medicine at Jefferson Medical College, Philadelphia, Pa., since 1912, and for more than 22 years a consulting physician in Philadelphia, died June 30, at the age of 65. He was a fellow of the Royal College of Physicians of England, a member of the British Medical Association, and a past president of the Association of American Physicians. Dr. McCrae collaborated with Sir William Osler in writing *Cancer of the Stomach;* and also *A System of Medicine,* which he later abridged into the 5-volume work known as *Modern Medicine.* After Sir William Osler's death he edited the latter's *Principles and Practice of Medicine.*

RALPH HENDRICKS, M.D., Health Officer of Spokane, Wash., died recently. He was a member of the A.P.H.A.

DR. CLARENCE JOSEPH D'ALTON, of New Milford, Conn., retired nerve specialist of New York City, died July 12. He served under Dr. Thomas W. Salmon in the U. S. Army Medical Corps during the World War, and was active in the work of The National Committee on Mental Hygiene.

CONFERENCES

Aug. 8–19, Fifteenth International Physiological Congress, Leningrad and Moscow, Russia.

Aug. 9, 10, North Pacific Pediatric Society, Seattle, Wash.

Aug. 10–17, Meeting of Health Section of the World Federation of Education Associations, Oxford, England.

Aug. 22–23, Central States Section of the American Water Works Association, Pittsburgh, Pa.

Aug. 29–Sept. 5, First Annual Meeting, Latin American Congress of Physical Therapy, X-ray, and Radium, Mexico City.

Sept. 20–Oct. 2, 7th International Medical Post-Graduate Congress, to be held during the World Exhibition, under the auspices of the University of Brussels, Bruxelles-Spa, Belgium.

Sept. 30–Oct. 4, American Hospital Association, St. Louis, Mo.

Sept. 30–Oct. 4, 21st National Recreation Congress, sponsored by the National Recreation Association, Chicago, Ill.

Oct. 5–7, Conference of State Sanitary Engineers, Milwaukee, Wis.

Oct. 7–10, Sixty-fourth Annual Meeting of the American Public Health Association, Milwaukee, Wis. Headquarters: Hotel Schroeder.

Oct. 7–10, Annual Meeting of the American Association of School Physicians, Milwaukee, Wis.

Oct. 7–10, Meeting of the American

Association of State Registration Executives, Milwaukee, Wis.

Oct. 7–10, Meeting of the International Association of Medical Health Officers, Milwaukee, Wis.

Oct. 7–10, State Laboratory Directors Conference, Milwaukee, Wis.

Oct. 7–10, Conference of Wisconsin Health Officers, Milwaukee, Wis.

Oct. 8–11, Meeting of the Association of Dairy, Food and Drug Officials, Milwaukee, Wis.

Oct. 10–11, Meeting of the International Association of Dairy and Milk Inspectors, Milwaukee, Wis.

Oct. 14–18, 24th Annual Safety Congress, National Safety Council, Inc., Louisville, Ky.

Oct. 28–31, 18th Annual Meeting, American Dietetic Association, Cleveland, O.

Nov. 1, 2, School Health Conference, sponsored by the Department of School Health and Physical Education of the National Education Association, Philadelphia, Pa.

Nov. 15, 16, Sixty-first Annual Meeting, New Jersey Health and Sanitary Association, Hotel Berkeley-Carteret, Asbury Park, N. J.

Nov. 19, 20, Annual Meeting of the Southern Branch, American Public Health Association, St. Louis, Mo.

Dec. 30–Jan. 4, 1936, Winter Meeting of the American Association for the Advancement of Science and Associated Societies, St. Louis, Mo.

July 27–31, 1936, Second International Congress on Mental Hygiene, Paris.

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